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## SULFONAMIDES IN BRONCHIAL SECRETION

THE EFFECT OF SULFONAMIDES IN  
BRONCHIECTASIS

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The frequency of chronic infectious diseases of the bronchi and the limitations of the various medical measures used in their treatment would appear to justify an investigation of the possibilities of sulfonamide therapy, yet a review of the recent literature shows only a few brief references to this subject. Although the pathologic changes in many of these diseases are at least partially irreversible, it would seem logical that diminution in the infectious factor should result in improvement. Acquired bronchiectasis and chronic asthmatic bronchitis are characterized in their earlier phases by impairment in the function of the bronchi and bronchioles, gross structural disease is in most cases a secondary development. The possibility of restoring normal structure and function by medical measures is not a likely one, but partial elimination of infection would be expected to have a favorable effect on the symptoms and on the natural course of the disease.

The distribution of the sulfonamides, including sulfadiazine,<sup>1</sup> among the various body fluids has been thoroughly studied. The purpose of the first part of our investigation was to determine (1) the correlation between blood levels of sulfonamide following oral administration and their concentration in bronchial secretion and (2) the concentration in bronchial secretion resulting from the intratracheal or intrabronchial instillation of sulfonamide at twenty-four hour intervals following the instillation.

Because the character of bronchial secretion presents a special problem in chemical analysis, a modification of the Bratton and Marshall<sup>2</sup> method for the quantitative determination of sulfonamide concentration, applicable to bronchial secretion, was devised.<sup>3</sup> Because of the obvious inaccuracies which would result from the use of sputum for such analyses, only bronchoscopic specimens were submitted to examination. The use of cocaine hydrochloride as a local anesthetic preliminary to bronchoscopy does not interfere with the color

reaction on which the determination is based. Atropine was omitted from the usual prebronchoscopic hypodermic because of its drying effect on the bronchial secretion.

### DETERMINATION OF SULFONAMIDE IN BRONCHIAL SECRETION, A METHOD FOR OBTAINING A CLEAR FILTRATE<sup>3</sup>

Solutions used, except 10 per cent sodium hydroxide, are those of Bratton and Marshall. Transfer secretion to beaker, obtaining weight by difference. Add gradually 10 per cent sodium hydroxide enough to render the secretion homogeneous (not more than an equal volume). Rinse solution into a stoppered graduate with saponin solution, diluting until viscosity appears low. Add 15 per cent trichloroacetic acid solution, a small amount at a time with gentle shaking, until the point is reached at which a little of the precipitate remains undissolved after prolonged shaking. Note volume. Divide latter by weight of sample of secretion to obtain dilution. Remove to a small flask the number of cubic centimeters corresponding to 1 Gm of secretion and add enough saponin solution to bring the volume to 16 cc. Add 4 cc of 15 per cent trichloroacetic acid solution, shake well, filter, and proceed with the clear filtrate as with a blood filtrate.

### RELATION BETWEEN CONCENTRATIONS OF SULFON- AMIDE IN BRONCHIAL SECRETION AND IN BLOOD AFTER ORAL ADMINISTRATION

The amount of secretion present in the bronchial tree of normal subjects is insufficient to permit collection of adequate amounts for chemical analysis. Therefore, as subjects for this investigation, 12 patients with acquired bronchiectasis under treatment at the Chevalier Jackson Bronchoscopic Clinic were chosen, an effort being made to select those with varying degrees of disease and to include patients who produced but small amounts of sputum as well as those with much expectoration. The bronchiectasis was of the saccular type in 8 cases and of the cylindric or fusiform type in 4.

Sulfadiazine was given by mouth in sufficient dosage to maintain adequate blood levels. Specimens of bronchial secretion were obtained by bronchoscopy at intervals of from one to four days and the concentration of sulfadiazine determined by the method described. The results were then compared with the concentrations in specimens of blood taken at the time of bronchoscopy.

**Results**—The results of the individual determinations are shown in table 1. The concentrations of sulfadiazine in bronchial secretion range from 18 to 116 mg per hundred grams, with corresponding blood sulfadiazine levels of from 39 mg to 164 mg per hundred cubic centimeters.

From the Chevalier Jackson Bronchoscopic Clinic, Temple University Hospital.

<sup>1</sup> Reinhold, J. G., Flippin, H. F., Schwartz, Leon, and Dorn, A. H. The Absorption, Distribution and Excretion of 2 Sulfanilamide-primidine (Sulfapyrimidine Sulfadiazine) in Man. *Am J M Sc* 201: 66-115 (Jan.) 1941.

<sup>2</sup> Bratton, A. C. and Marshall, E. K., Jr. A New Coupling Component for Sulfanilamide Determination. *J Biol Chem* 228: 337-339 (Mar.) 1939.

<sup>3</sup> The author is indebted to Robert H. Hamilton, Ph.D., M.D., associate professor of physiological chemistry, Temple University School of Medicine for this modification which he developed and for the description of technique.



The average ratio between the two concentrations (bronchial/blood) was 0.58, with an average variation from the mean of 0.08, or 14.0 per cent. The ratio obtained in considering only those determinations with the higher results (blood levels from 10.0 to 16.4 mg per hundred cubic centimeters) is only slightly higher (0.61) than that obtained by considering only the determinations with the lower results (0.55). The values obtained in those patients who produced but little bronchial secretion differed to no significant degree from those in the patients who produced large amounts, furthermore the ratios obtained in the cases of saccular bronchiectasis do not differ appreciably from those

TABLE 1—Relation Between Concentrations of Sulfadiazine in Bronchial Secretion and in Blood Following Oral Administration

		Approximate Daily Sputum Volume	Sulfadiazine Concentration (Mg per 100 Cc.)		Ratio	
			Bronchial Secretion	Blood	Bronchial	
					Blood	
S J	Bilateral cylindric bronchiectasis	25 cc	4.2	7.2	0.58	
			7.5	12.3	0.61	
			7.5	10.2	0.73	
			6.0	11.2	0.54	Av 0.62
I S	Bilateral cylindric bronchiectasis	40 cc	5.0	13.0	0.39	
			6.2	10.5	0.59	
			11.6	16.4	0.70	Av 0.56
H T	Unilateral cylindric bronchiectasis	15 cc	2.2	7.0	0.32	
			4.0	8.5	0.47	Av 0.40
E M	Bilateral cylindric bronchiectasis	5 cc	8.2	13.8	0.60	
			6.0	9.5	0.63	
			2.0	7.2	0.28	
			7.8	10.4	0.75	Av 0.56
V R	Bilateral saccular bronchiectasis	200 cc	7.5	12.0	0.62	
			4.6	9.5	0.48	Av 0.55
B B	Bilateral saccular bronchiectasis	60 cc	5.2	7.5	0.69	
			9.5	12.0	0.79	
			2.0	5.4	0.37	
			4.6	7.2	0.63	Av 0.62
M S	Bilateral saccular bronchiectasis	400 cc	3.8	8.0	0.48	
			2.2	3.0	0.56	
			3.8	12.8	0.30	Av 0.45
D B	Bilateral saccular bronchiectasis	50 cc	4.5	9.0	0.50	
			8.0	8.5	0.94	
			6.8	7.6	0.89	
			3.3	5.4	0.61	
			9.4	12.7	0.74	
			8.0	10.0	0.80	
			8.0	11.8	0.68	Av 0.74
I O	Unilateral saccular bronchiectasis	50 cc	3.5	9.6	0.37	
			3.3	10.2	0.32	
			5.9	10.4	0.57	Av 0.42
I T	Bilateral saccular bronchiectasis		7.2	6.0	0.53	
			6.2	8.1	0.76	
			3.8	9.5	0.40	Av 0.50

obtained in the cases of fusiform and cylindrical bronchiectasis, the averages being 0.59 and 0.55 respectively.

#### SULFONAMIDE CONCENTRATION IN BRONCHIAL SECRETION FOLLOWING INTRATRACHEAL OR INTRABRONCHIAL INSTILLATION

The feasibility of using solutions showing bactericidal or bacteriostatic activity for intrabronchial instillation or lavage has been demonstrated by Kolmer,<sup>4</sup> Stitt,<sup>5</sup> Moore<sup>6</sup> and others. As subjects for this investigation, 10 patients having acquired bronchiectasis were used. In all eighteen instillations were performed, a 5 per cent suspension of microcrystalline sulfathiazole<sup>7</sup> being

used in 12 instances and a 2.5 per cent aqueous solution of sulfadiazine<sup>8</sup> in 6. Several of the instillations were performed bronchoscopically, the remainder were performed by instillation through the larynx following preliminary cocaine anesthesia. Specimens of bronchial

TABLE 2—Concentration of Sulfonamide in Bronchial Secretion Following Intratracheal or Intrabronchial Instillation

		Approximate Daily Sputum Volume	Instillation	Concentration (Mg per 100 Cc.)	
				24 Hours	48 Hours
E M	5 cc		Sulfathiazole, 1.0 Gm	270.0	8.5
D W	10 cc		Sulfathiazole, 1.0 Gm	96.0	Negative
S J	25 cc		Sulfathiazole, 0.5 Gm	22.0	Negative
J T	30 cc		Sulfathiazole, 1.0 Gm	4.6	Negative
D B	50 cc		Sulfathiazole, 1.0 Gm	6.0	Negative
			Sulfathiazole, 1.0 Gm	9.0	Negative
			Sulfathiazole, 1.0 Gm	9.3	Negative
			Sulfathiazole, 0.6 Gm	Negative	5.7
V R	200 cc		Sulfathiazole, 1.0 Gm	40.0	
M S	400 cc		Sulfathiazole, 0.5 Gm	2.0	Negative
			Sulfathiazole, 0.5 Gm	3.2	Negative
			Sulfathiazole, 1.0 Gm	2.0	Negative
			Sulfadiazine, 0.5 Gm	Negative	Negative
E F	200 cc		Sulfadiazine, 0.5 Gm	Negative	
A P	100 cc		Sulfadiazine, 0.75 Gm	Negative	
B B	60 cc		Sulfadiazine, 0.75 Gm	Negative	
			Sulfadiazine, 0.75 Gm	Negative	
E O	50 cc		Sulfadiazine, 0.50 Gm	Negative	

secretion were obtained by bronchoscopic aspiration at twenty-four hour intervals and the concentration of sulfonamide determined by the aforementioned method.

**Results**—The results are given in table 2. The values obtained following instillation of microcrystalline sulfathiazole suspension appeared to depend largely on the amount of sputum being produced at the time of the instillation. The 2 cases in which unusually large concentrations were found at the end of twenty-four hours were those in which the average daily sputum volume had been 10 cc or less, much smaller concentrations were found in the remaining cases. In 2

TABLE 3—Effect of Sulfonamide Therapy on Bacterial Flora in Ten Cases of Bronchiectasis

	Sulfadiazine Orally		Sulfathiazole Instillation	
	Present Before Treatment	Disappeared from Culture In	Present Before Treatment	Disappeared from Culture In
Streptococcus hemolyticus				
Probably group A	3	1	2	0
Other groups	4	1	4	2
Streptococcus nonhemolyticus	7	4	3	1
Staphylococcus albus (nonhemolytic)	0	0	2	2
Pneumococcus, type 14	1	1	0	0
Pneumococcus, type 22	1	1	1	0
Pneumococcus, type 27	1	0	0	0
Pneumococcus, type 29	1	1	0	0
Hemophilus influenzae	2	0	2	1
Friedländer's bacillus	0	0	1	1
Bacteroides melaninogenicum	0	0	1	1
Other bacteroids	0	3	3	3
Neisseria flava	0	4	1	0
Neisseria sicca	4	4	0	0
Neisseria catarrhalis	5	2	2	1
Diphtheroids	1	0	1	1
Micrococci	2	2	1	1
Bacillus coli	1	0	0	0

instances appreciable amounts of sulfathiazole were found at the end of forty-eight hours.

In none of the cases following instillation of sulfadiazine solution were there significant amounts of sulfadiazine at the end of twenty-four hours, regardless

<sup>4</sup> Kolmer, J. A. Bronchial Disinfection and Immunization Effect in Rabbits of Intrabronchial Injections of Various Chemical Disinfectants, Arch. Int. Med. 51: 346-366 (March) 1933.

<sup>5</sup> Stitt, H. L. Bronchial Lavage for Disinfection and Immunization of the Bronchial Tree, J. Med. 14: 576-579 (Jan.) 1934.

<sup>6</sup> Moore, W. F. Bronchiectasis and Pulmonary Abscess. S. Clin. North America 4: 87-96 (Feb.) 1924.

<sup>7</sup> Microcrystalline sulfathiazole 5.0 Gm. strong solution of iodine (I ngol's solution) 2.0 cc, distilled water to 100.0 cc.

<sup>8</sup> Sulfadiazine powder 2.5 Gm, triethanolamine 7.5 cc, butyl para hydroxybenzoate 0.05 Gm, boiled distilled water to 100.0 cc.

of the amount of sputum being produced at the time of instillation. Presumably this is because the sulfadiazine, being in aqueous solution, is more rapidly eliminated by absorption and expectoration than the suspension of microcrystalline sulfathiazole.

#### EFFECT OF SULFADIAZINE GIVEN ORALLY IN ACQUIRED BRONCHIECTASIS

The 10 patients used as subjects for this investigation were given sulfadiazine by mouth in courses lasting from four to fifteen days. As an adjuvant measure to improve bronchial drainage, bronchoscopic aspiration was performed at intervals of from two to four days during the time the sulfadiazine was being administered. Bronchoscopic specimens were obtained for bacteriologic study at the beginning and end of each course.

several reasons<sup>9</sup>. In the first place, spontaneous alterations in bronchiectatic flora are presumably rather frequent, so that the disappearance of an organism from the culture during the period of treatment does not necessarily mean that it has been eliminated by the specific therapy. Careful examination of table 4 will show several instances in which organisms not present before treatment were recovered in the bronchial secretion after treatment, in most cases these organisms were of the group ordinarily considered to constitute the normal throat flora, and their appearance in and disappearance from the bronchial cultures is therefore probably of no great significance.

The relative pathogenicity of the various organisms present in a given case is difficult to estimate except in a general way. Ordinarily, hemolytic streptococci

TABLE 4—Effect of Sulfadiazine Given Orally (Combined with Bronchoscopic Aspiration) in Ten Cases of Bronchiectasis

D S	Drug	Bronchoscopies	Sputum Volumes		Cultures (Bronchoscopic)	
			Average First 2d	Average Last 2d	Before	After
D S	Sulfadiazine 6 days oral	Two	20 cc.	8 cc.	Few hemolytic streptococci probably group A Few nonhemolytic streptococci Few N. flava and N. catarrhalis	Occasional nonhemolytic streptococci Occasional N. flava
F O	Sulfadiazine 8 days oral	Three	70 cc.	30 cc.	Few hemolytic streptococci moderate number of non hemolytic streptococci Few N. sicca and N. flava	Occasional hemolytic streptococci Many nonhemolytic streptococci Few bacteroids
B B	Sulfadiazine 10 days oral	Two	105 cc.	30 cc.	Few bacteroids Moderate number of hemolytic streptococci few non hemolytic streptococci Moderate number of bacteroids few diphtheroids N. flava N. sicca and N. catarrhalis	Few hemolytic streptococci Moderate number of H. influenzae Few N. catarrhalis
W D	Sulfadiazine 9 days oral	Three	30 cc.	6 cc.	Many pneumococci type 14 Few nonhemolytic streptococci Few bacteroids N. sicca N. flava and N. catarrhalis	Few nonhemolytic Staph. aureus Moderate number of H. influenzae
S J	Sulfadiazine 6 days oral	Four	12 cc.	5 cc.	Moderate number of pneumococci type 92 Few nonhemolytic streptococci Few N. catarrhalis	Few nonhemolytic and hemolytic streptococci Few N. catarrhalis and sicca
E M	Sulfadiazine 4 days oral	Two	24 cc.	6 cc.	Many pneumococci type 29 Moderate number of N. sicca Moderate number of N. flava	Few nonhemolytic streptococci Few H. influenzae Few micrococci and diphtheroids
D W	Sulfadiazine 6 days oral	Three	203 cc.	44 cc.	Many mucoid hemolytic streptococci Few nonhemolytic streptococci Moderate number of bacteroids	Occasional nonhemolytic streptococci Moderate number of cocciform bacilli
M S	Sulfadiazine 15 days oral	Five	230 cc.	53 cc.	Many hemolytic streptococci probably group A Few nonhemolytic streptococci Few H. influenzae Few bacteroids and micrococci Many mucoid hemolytic streptococci	Moderate number of hemolytic and non hemolytic streptococci Few bacteroids and micrococci Many H. influenzae Few hemolytic and nonhemolytic streptococci
V R	Sulfadiazine 6 days oral	Three	220 cc.	60 cc.	Many H. influenzae Many B. coli few bacteroids	Moderate number of H. influenzae Few B. coli and bacteroids occasional micrococci
L F	Sulfadiazine 11 days oral	Five	285 cc.	128 cc.	Many hemolytic streptococci probably group A Occasional pneumococci type 27 Occasional micrococci and N. catarrhalis	Many hemolytic streptococci Moderate number of pneumococci Few bacteroids and N. catarrhalis

and daily sputum volumes were recorded accurately. An attempt was made to maintain blood levels between 8 and 12 mg. per hundred cubic centimeters and blood counts and urinalyses were obtained at suitable intervals.

An estimation of the clinical effect was based on (1) reduction in amount of expectoration, and (2) alteration in the bacterial flora of the bronchial secretion as determined in specimens removed bronchoscopically.

**Results**—The results are presented in table 4. The outstanding effect was a definite and rather pronounced decrease in the daily sputum volume. The actual reductions in volume varied from 55 to 81 per cent with an average of 69 per cent, so that most of the patients at the end of the combined course of sulfadiazine therapy and bronchoscopic aspiration were producing from one fifth to one third of the original amounts of sputum.

The effect on bacterial flora is summarized in table 3. The proper evaluation of these data is difficult for

of certain groups viridans streptococci, pneumococci, Friedlander bacilli and the like, are considered to be pathogenic, although this cannot be proved with certainty without pathogenicity testing. The Neisseriae (flava, sicca and catarrhalis) and the various bacteroids, diphtheroids and micrococci are usually considered as secondary invaders, but this of course does not mean that they are innocuous or that they have no part in producing symptoms or tissue damage.

Table 3 also summarizes the alterations in bacterial content noted following from one to three instillations of a 5 per cent suspension of microcrystalline sulfathiazole as shown by cultures obtained bronchoscopically before and from twenty-four to forty-eight hours after the last instillation. The difficulties encountered in evaluating these data are the same as those already described.

<sup>9</sup> Suggestions concerning evaluation of the bacteriologic data were given by Earle H. Spaulding, A.B., Ph.D., associate in bacteriology, Temple University School of Medicine.

## COMMENT

The clinical data presented are intended as only a preliminary report, further study and observation will be required to confirm our impression that the measures described are of actual value. The general effect of sulfonamide compounds appears favorable, particularly when combined with a series of bronchoscopic aspirations. We have tentatively preferred the oral method of administration because of comfort and convenience from the patient's standpoint and because its use presumably allows a much more diffuse, uniform and prolonged action than can be obtained by instillation or a series of instillations.

The disadvantages encountered in the use of instillation are the following: 1 It is difficult to distribute the instilled material uniformly among the various diseased segments, even when the instillation is performed bronchoscopically. 2 Prolonged action can be maintained only by daily instillation, in the case of sulfadiazine aqueous solution, even this would fail to maintain sufficient amounts for continuous local effect. 3 The consistency of bronchial secretion appears to be unfavorably affected by instillation of sulfonamides, this change is particularly true in the case of microcrystalline sulfathiazole suspension which causes a rather definite increase in the viscosity of the secretion. 4 Local efficacy of sulfonamides is greatly diminished in presence of purulent material of the type produced in bronchiectasis, although presumably the addition of an oxidizing agent such as strong solution of iodine at least partially destroys the inhibitory effect<sup>10</sup> of the para-aminobenzoic acid present in purulent exudate.

Untoward reactions were not observed in this study, with one exception. One of the patients, a girl aged 17 years with bilateral saccular bronchiectasis, developed fever reaching 102 F the day following an instillation of 5 per cent microcrystalline sulfathiazole suspension. The temperature subsided promptly following bronchoscopic aspiration, and since the findings were not suggestive of a lobar atelectasis we believe that this temporary effect was due to transient occlusion of one or more of the segmental branch bronchi by thick secretion.

We hesitate to advance absolute indications for the type of treatment described. However, it would appear to be of definite value as a preliminary to lobectomy or pneumonectomy for suppurative disease. Here reduction in the amount of suppurative exudate from the diseased lung lessens the possibility of aspiration into the good lung at the time of operation and partially eliminates the risk of postoperative atelectasis or pneumonitis. Diminution of infection should likewise decrease the likelihood of postoperative empyema.

Ruggins,<sup>11</sup> Perry and King<sup>12</sup> and others have amply emphasized the problem created by the morbidity of patients with well established bronchiectasis who fall into the nonsurgical group. These patients, if untreated, follow the natural course of the disease through a series of acute infectious complications to chronic disability and, usually, early death. The persistence of symptoms and progression of disease in bronchiectasis are due in the main to chronic infection. It has appeared to us that this factor can be most directly attacked

by combining a measure which improves bronchial drainage and prevents stagnation (bronchoscopic aspiration<sup>13</sup>) in a rather intensive course with specific antibacterial therapy. This means, in most cases, hospitalization for a period of from seven to ten days.

It is not possible to predict in advance which patients will obtain the most clinical benefit. For example, M. S., a girl aged 19 years with unusually extensive saccular bronchiectasis involving four lobes, had been producing approximately a pint of foul sputum daily. She was given a course of sulfadiazine by mouth for nine days and received four bronchoscopic aspirations during the same period. Her sputum was reduced to less than one fifth of its former volume, and although the cultures showed no qualitative change in the bacterial flora there was substantial decrease in the odor. More significant is the fact that during the six week period after leaving the hospital this patient increased her weight from 99 to 116 pounds (from 45 to 52.6 Kg.), more than she had ever weighed previously.

Undoubtedly the research programs now under way will produce specific antibacterial substances whose action will be more potent and toxicity less than that of the sulfonamides we have been using. Penicillin has already been found effective in acute phases of pulmonary suppuration in the three cases reported by Blake and Craige<sup>14</sup>. Castex, Capdehourat and Lavarello<sup>15</sup> and more recently Harris, Sommer and Chapple<sup>16</sup> have administered sulfonamides by inhalation. Further investigations similar to the one which has been attempted in this study will probably be warranted.

## SUMMARY AND CONCLUSIONS

1 The concentration of sulfadiazine in bronchial secretion during oral administration is approximately 60 per cent of the blood level. This ratio is apparently not materially affected by the extent of bronchial disease or the amount of expectoration.

2 After intratracheal or intrabronchial instillation of 5 per cent aqueous suspension of microcrystalline sulfathiazole, significant concentrations persist in the bronchial secretion for twenty-four to forty-eight hours. The concentrations are larger, as would be expected, in cases in which there is but little expectoration.

Elimination of 2.5 per cent aqueous solution of sulfadiazine following intratracheal or intrabronchial instillation appears to be much more rapid, the amounts remaining at the end of twenty-four hours being negligible.

3 Combined sulfonamide and bronchoscopic treatment in 10 cases of acquired bronchiectasis resulted in a considerable reduction in daily sputum volume, with favorable alterations in the bacterial flora.

4 The plan of treatment described should prove of definite value as a preliminary to lobectomy or pneumonectomy for suppurative disease. It is probably worthy of trial in cases of well established nonsurgical bronchiectasis.

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## SOME COMPLICATIONS OF CAUDAL ANESTHESIA AND THEIR MANAGEMENT

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Recently there has been comparatively widespread and in some instances indiscriminate use of continuous caudal anesthesia in obstetrics. To prevent serious accidents, some of the hazards and the methods of preventing and combating them should be reemphasized.

As more data are accumulated, one learns of complications which might have been prevented had the proper safeguards been taken. Some of the complications presented followed the single injection rather than the continuous administration of the anesthetic. However, the same principles apply to the two groups.

In a series of 121 cases of caudal anesthesia at the Chicago Lying-in Hospital there have been no deaths, either maternal or fetal. However, some interesting reactions have occurred, the most frequent being a drop in blood pressure. Our incidence of failures is 16 per cent.

### SUBDURAL INJECTION

Most serious and dangerous of the complications is that of injecting the solution into the subarachnoid space, and it has only been recently that precautions other than simple aspiration have been taken to prevent this accident.

While no deaths have been reported due to this complication since the introduction of continuous caudal anesthesia, there have been serious accidents, and in 1920 Zweifel<sup>1</sup> reported a series of 4,200 single caudal injections with 10 deaths, 3 of which were attributed to the anesthesia, an incidence of 1 in 1,400. All 3 deaths occurred within a few minutes of respiratory failure, and in connection with 2 of them punctures in the dura were demonstrated at autopsy. The third was not investigated and was ascribed to acute procaine poisoning. About three years ago a similar accident was observed by Eastman<sup>2</sup>. In approximately the one hundredth case of single dose caudal anesthesia in the obstetric service at Johns Hopkins Hospital a death occurred due to injection of 45 cc of 1 per cent procaine hydrochloride into the subarachnoid space although the usual precaution of aspiration was carried out. Chemical analysis of the spinal fluid post mortem showed a lethal concentration of procaine.

My associates and I have observed perforation of the dura once in our series of 110 cases. In this instance the needle was introduced into the caudal canal and on aspiration no spinal fluid was obtained. According to the routine advocated by Hingson and Edwards<sup>3</sup> and Gready and Hesseltine<sup>4</sup> a test dose of 8 cc of a 1.5 per cent solution of metacaine hydrochloride (120 mg) was injected and ten minutes allowed to elapse. (The importance of this simple precaution cannot be too strongly emphasized.) At the end of ten minutes the patient had almost complete paralysis of the dependent extremity but was still able to move the toes on the

opposite foot. In another two minutes there was complete motor paralysis of both lower extremities, while on the abdomen the anesthesia had risen to the level of the third thoracic segment. Since no spinal fluid was obtained by aspiration, it is apparent that had the precautionary measure of waiting ten minutes before injecting the 30 cc dose not been taken the procedure would have resulted in massive spinal anesthesia (approximately 450 mg in 30 cc), which probably would have been fatal.

Block and Rochberg<sup>5</sup> report 1 case out of a series of 39 in which massive spinal anesthesia occurred. In their case 30 cc of a 1 per cent solution of procaine hydrochloride had been given. Fortunately the patient survived after a prolonged period of artificial respiration.

Small<sup>6</sup> reported a similar case of possible massive subdural injection in spite of careful precautionary measures. He employed the continuous drip technique. Respiratory failure also developed.

Another such case has been brought to my attention by Brown<sup>7</sup>. In this instance a single caudal injection had been made for a proposed cesarean section. The patient survived spinal anesthesia high enough to cause both respiratory and vocal paralysis. These near catastrophic results illustrate the importance of combining preliminary aspiration with a suitable test for subarachnoid injection. Hingson and Edwards<sup>3</sup> reported that perforation of the dura had occurred only twice in more than 1,000 injections.

The best treatment for this unwelcome accident is prevention, and the test dose I believe is the best method available to avoid a massive subdural injection. It is further recommended that a test dose of 5 to 8 cc be repeated ten minutes prior to each subsequent injection. This is especially important when the needle technique is used, since the needle may pierce the dura at any time during the procedure. This apparently occurred in the case reported by Small.

A thorough knowledge of the normal anatomy of not only the bony sacrum and sacral canal but also the dural sac and spinal cord is important and indeed fundamental if one is to administer caudal anesthesia intelligently and safely. The spinal cord normally ends at the level of the first lumbar vertebra, with the dural sac containing spinal fluid and the cauda equina tapering to a point in the sacral canal at the level of the second sacral vertebra. The contour of the lower end of the dural sac is not constant but varies with straining, jugular compression and other forces as has been shown by x-rays after introduction of opaque substances. The sacral canal is continuous with the epidural space in the vertebral canal and extends all the way to the foramen magnum. Anatomic variations in the sacrum are common and may at times interfere with the proper insertion of the needle.

The important fact that the dural sac may extend lower than the second sacral vertebra should be kept constantly in mind. If the patient is thin and the sacrum short, the use of a 2½ inch rather than a 3 inch needle lessens the danger of perforating the dura. This complication also seems less likely when the catheter method is used. There is a continuation of the dura around each of the nerves in the sacral canal for a variable distance as can be seen in the illustration.

Elh Lilly & Co furnished the metacaine used in this study. Dr William J Dieckmann and Dr H Close Hesseltine gave helpful criticism of the manuscript.

From the Department of Obstetrics and Gynecology of the University of Chicago and the Chicago Lying-in Hospital.

<sup>1</sup> Zweifel E. Die Todesfälle bei Sakralanästhesie. Zentralbl f Gynak. 44:140, 1920.

<sup>2</sup> Eastman Nicholson J. Personal communication to the author.

<sup>3</sup> Hingson R A and Edwards W B. Continuous Caudal Anesthesia in Obstetrics. J A M A 121:225 (Jan 23) 1943.

<sup>4</sup> Gready T G and Hesseltine H C. Continuous Caudal Anesthesia in Obstetrics. J A M A 121:229 (Jan 23) 1943.

<sup>5</sup> Block Nathan and Rochberg Samuel. Continuous Caudal Anesthesia in Obstetrics. Am J Obst & Gynec 45:645 (April 1) 1943.

<sup>6</sup> Small M J. A Serious Complication of Caudal Anesthesia. J A M A 122:671 (July 3) 1943.

<sup>7</sup> Brown Hugh O. Personal communication to the author.

It is theoretically possible for the point of the needle to pierce this dural sheath, thus permitting the injected solution to dissect up into the subarachnoid space. Such a puncture of this nerve sheath and subsequent injection may cause pain and so give some warning.

Should the recommended precautions be disregarded and massive spinal anesthesia occur, treatment should be instituted immediately. The patient should be supported in a sitting position, and a lumbar puncture should be done using a large needle so that the fluid will flow rapidly. Walker<sup>9</sup> recommends that approximately 100 cc of spinal fluid be withdrawn. The flow can be hastened by compression of the jugular veins.

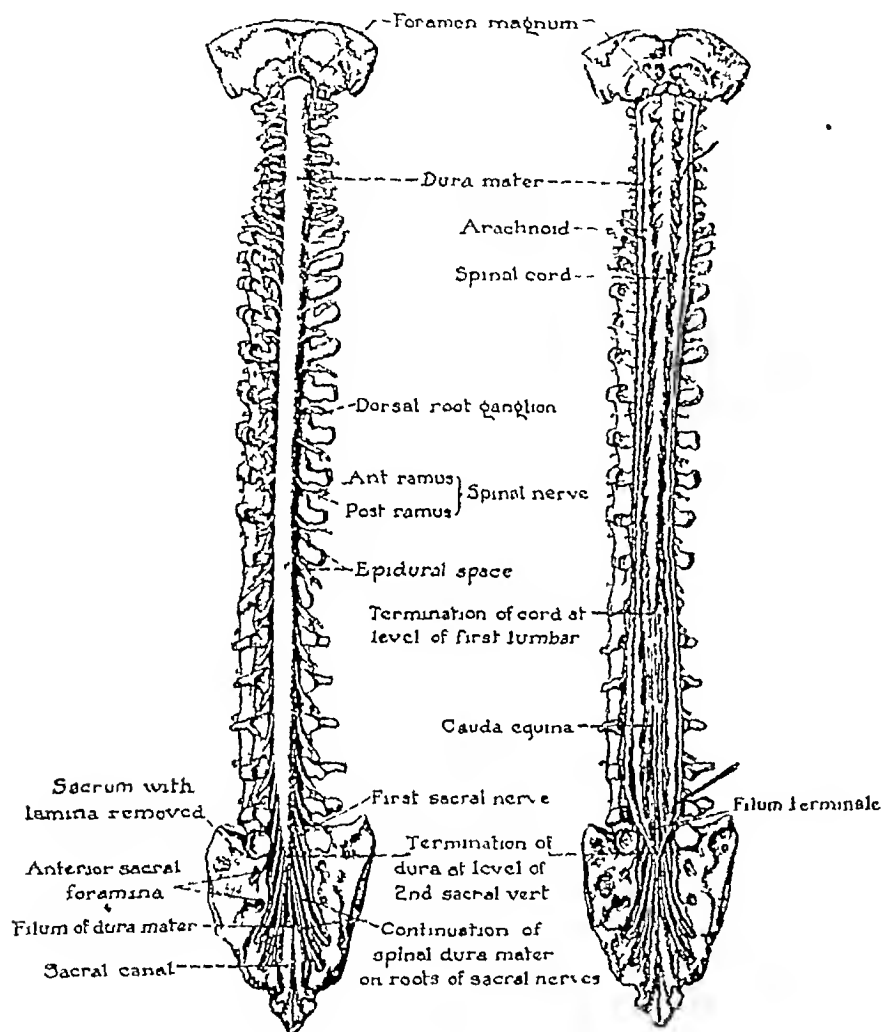


Diagram showing the relationship of the dural sac and cord to the epidural space and to the sacral and the vertebral canal (after Toldt, Karl, *Atlas of Human Anatomy*, New York, Macmillan Company, 1926).

in the neck. Forced drainage may also be accomplished by giving 0.45 per cent saline solution intravenously while the lumbar puncture needle is in place. Hypertonic dextrose solution would decrease the amount of spinal fluid and thus retard drainage. It is extremely important that the fluid be drained off before the drug has reached the vital centers in the brain. Even though the respiratory center is anesthetized, the method should still be tried in order to prevent involvement of the vasomotor center, which is at a higher level. Drop in blood pressure and shock are combated in the usual manner with ephedrine, stimulants and intravenously injected fluids, such as plasma. Respiratory paralysis must be treated by artificial respiration. The presence of a physician anesthetist skilled in the art of intubation and resuscitation might prove life saving, as it undoubtedly did in 2 of the cases reported.

## INFECTION

Because its appearance is usually delayed, infection is sometimes overlooked as a complication of caudal block. It ranks second in importance to massive spinal anesthesia. It may occur either in the tissues outside the sacral canal or in the epidural space. The latter is more serious because of its proximity to the cord and nerves of the spinal and sacral canal. It may be extremely dangerous and even cause death. That the epidural space is much more susceptible to infection than the subarachnoid space is suggested by experiments on monkeys. Cultures of virulent organisms were injected directly into the spinal fluid without causing any evidence of inflammation.<sup>9</sup>

Edwards and Hingson<sup>10</sup> recently reported a death from infection in a series of 650 obstetric cases. An epidural abscess developed with which there were no localizing signs or neurologic manifestations. The patient was treated with sulfonamides but died on the thirty-first postpartum day. Post-mortem examination revealed multiple small pulmonary abscesses and a large abscess involving the peridural space and communicating through the foramina with a subpsoas abscess. The infection had not penetrated the meninges.

Carlisle<sup>11</sup> reported a death following continuous caudal anesthesia of a patient aged 70. After laparotomy a large necrotic, sloughing ulcer developed over the sacrum which extended to the bone. Death on the twentieth postoperative day was believed to have been due to this infection. However, since autopsy was not permitted it is not known whether or not the epidural space or the meninges were involved.

Siever and Mousel<sup>12</sup> in their series of 300 cases had 1 case of epidural abscess. They report "the patient was seriously ill for three weeks but responded to large doses of sulfonamide compounds and completely recovered."

Manalan<sup>13</sup> reported staphylococcal meningitis occurring after 1 of 46 single caudal injections made with the catheter technique. On the third postpartum day symptoms of malaise, headache and hyperirritability developed. No local infection in the sacral canal could be determined by aspiration. The statement is made that "she recovered completely following a critical illness."

The complication was believed to have been due to sacral block, but this was never proved.

In 1927, following an attempt at sacral block, Hall<sup>14</sup> reported a death from gas bacillus infection. Southworth, Edwards and Hingson<sup>15</sup> reported low grade cellulitis about the sacral hiatus in 1 case in a series of 255.

<sup>9</sup> Walker, A. Earl. Unpublished data.  
<sup>10</sup> Edwards, W. B., and Hingson, R. A. The Present Status of Continuous Caudal Analgesia in Obstetrics. *Bull. New York Acad. Med.* 19: 507 (July) 1943.

<sup>11</sup> Carlisle, William T. Personal communication to the author.  
<sup>12</sup> Siever, James M., and Mousel, L. H. Continuous Caudal Anesthesia in 300 Unselected Obstetric Cases. *J. A. M. A.* 122: 424 (June 12) 1943.

<sup>13</sup> Manalan, S. A. Caudal Block Anesthesia in Obstetrics. *J. Indiana M. A.* 35: 564, 1942.

<sup>14</sup> Hall, L. S. Report of a Case of Septicemia Following a Sacral Anesthetic. *Am. J. Obst. & Gynec.* 14: 256 (Aug.) 1927.

<sup>15</sup> Southworth, J. L., Edwards, W. B., and Hingson, R. A. Continuous Caudal Analgesia in Surgery. *Ann. Surg.* 117: 321 (March) 1943.



The principal etiologic factor in this type of case is obviously faulty technique. Extreme care should be taken in the sterilization of the apparatus and in the preparation of the solution. The site for injection normally is not the cleanest part of the body, situated as it is close to the anus. It should be as thoroughly cleaned and prepared as for a major surgical procedure. Rigid asepsis is of the utmost importance. If the needle technique is used, the only bacteriologic weak point in the equipment once the tubing is connected is the plunger of the syringe. Since the anesthesia is sometimes carried out over a period of hours it is not at all improbable that during one of the many injections the plunger may be accidentally contaminated and then on a subsequent injection, bacteria may be introduced into the sacral canal.

Symptoms of epidural abscess at first are those of systemic infections in general, such as malaise, fever and leukocytosis. According to textbooks<sup>16</sup> the symptom which first focuses attention on the spinal region as the site of infection is usually pain in the back which may be exaggerated by coughing, sneezing, jugular compression or movement of the spinal column. There also may be tenderness over the spine in the region of the abscess. Radicular pains at the site of the abscess are common, and there may be hypesthesia or numbness in the dermatome supplied by the nerve roots involved. If the abscess is situated in the lumbar region, spinal puncture should not be done because of the danger of penetrating the abscess with resultant contamination of the subarachnoid space. Bagley and his co-workers<sup>16</sup> recommend surgical drainage as soon as the diagnosis of abscess is established. This often necessitates laminectomy. Accessory measures, such as the use of sulfonamides, blood transfusion and the injection of a specific antitoxin, should be employed. Siever and Mousel<sup>12</sup> treated their patient with sulfonamides alone. She survived. The help of a competent neurologist may be of much value in locating the site of infection.

Local infection about the site of injection does not present such a problem as infection in the epidural space. There the management is the same as for other superficial infections. In our series so far we have had no infection of the epidural space nor have we had any local infection of the skin.

#### INTRAVENOUS INJECTION

Intravenous injection of the drug is another complication which cannot always be avoided. The minimum lethal intravenous dose of procaine in animals has been found to be one-tenth the amount necessary to kill the animal if given subcutaneously.<sup>17</sup> Preliminary aspiration must always be carried out to minimize this danger. If blood is obtained the position of the needle must be changed until blood can no longer be aspirated and then the injection should proceed slowly and expectantly. We have had 1 case in which this complication occurred. In this instance no blood appeared on preliminary aspiration, and with the patient in the knee-chest position the 8 cc test dose was administered. The patient was then turned on the left side. In ten minutes

25 cc of a 1.5 per cent metycaine hydrochloride solution was injected. The patient immediately became irrational, talked incoherently and underwent mild clonic convulsions of both upper and lower extremities. Slight opisthotonos was present. This reaction lasted about two minutes and disappeared spontaneously before treatment could be instituted. We are certain that the fluid went intravenously for three reasons: (1) The needle and approximately 1 foot of the pressure tubing was found to be filled with blood, (2) absolutely no anesthesia developed although a total of 33 cc of the drug solution was injected, (3) the needle was reinserted and the caudal anesthesia carried out successfully and without reaction for the remainder of the labor. Possibly the 5 patients reported by Lahmann and Mietus<sup>18</sup> as becoming "irrational" and developing "clonic convulsions" received a certain amount of the drug intravenously. In these cases the reactions also passed off in a few minutes without serious effect. Cases are on record, however, in which intravenous injection of procaine has proved fatal. The toxicity from these drugs can be due to three factors: (1) rapid absorption, (2) intravenous injection and (3) idiosyncrasy. In richly vascular areas, such as the epidural space, rapid absorption is likely to take place.

Treatment for the condition is more or less specific and is the same as that for an overdose of the drug. The excellent work done on the toxicity of cocaine by Tatum, Atkinson and Collins,<sup>19</sup> using rabbits and dogs, proved that the various barbituric acid derivatives are of distinct value both in prophylaxis and in treatment. They showed that the prophylactic administration of a mixture of barbital sodium and paraldehyde to the dog raised the minimum lethal dose from 267 mg per kilogram to above 100 mg, representing approximately a fourfold increase in tolerance. In severe reactions due to overdosage death may occur from either paralysis of the heart muscle or respiratory paralysis during a convulsion. It is imperative that respiration be maintained, by artificial means if necessary. One of the quick acting barbiturates, such as evipal sodium or pentothal sodium, should relieve the convulsions immediately. When caudal anesthesia is used, it is wise to have one of these drugs readily available. In our case the reaction had disappeared by the time the drug was prepared for administration, so it was not given. Since the barbiturates counteract the untoward effects of the local anesthetic, the administration of one of them is indicated as preoperative medication when this type of anesthesia is to be used. Rapid absorption may be delayed by the addition of epinephrine to the solution.

#### IDIOSYNCRASY

Sensitivity to locally employed anesthetic drugs may occur, one of the most dangerous types being that manifested in the anaphylactic reaction. Every patient should be questioned prior to the initial injection as to a history of allergy and especially as to previous reactions to these drugs. Practically every patient has had a tooth pulled at one time or another under local anesthesia. If a reaction occurs its management should be the same as for any other anaphylactic reaction, namely the immediate hypodermic administration of

16 Bagley, J., Grant, F. C. and Herrick, C. Infections of the Nervous System and Its Coverings in Neurosurgery and Thoracic Surgery. Prepared and Edited by the Subcommittee on Neurosurgery and Thoracic Surgery of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Philadelphia: W. B. Saunders Company, 1943, chapter 5.

17 Gilman, S. The Treatment of Dangerous Reactions to Novocain. New England J. Med. 210: 841 (Nov. 24) 1934.

18 Lahmann, A. H. and Mietus, A. C. Caudal Anesthesia. Its Use in Obstetrics. Surg. Gynec. & Obst. 74: 63 (Jan.) 1942.

19 Tatum, A. L., Atkinson, A. J. and Collins, K. H. Acute Cocaine Poisoning. Its Prophylaxis and Treatment in Laboratory Animal. J. Pharmacol. & Exper. Therap. 26: 325 (Dec.) 1925.

epinephrine hydrochloride. Convulsions, should they occur, are controlled by using barbiturates intravenously, care being taken not to give an overdose.

#### INJURY OF NERVE ROOTS

Judging from the paucity of reports in the literature, injury of the nerve roots in the caudal canal does not often occur. I report some observations from a case which occurred in Hawkins's<sup>20</sup> practice in Chicago.

With the needle technic, continuous caudal anesthesia was maintained for nine and one-half hours. A total of 215 cc of a 1.5 per cent metyame hydrochloride solution was given. On the second postpartum day the patient complained of pain in the region of the sacrum, tingling and numbness of the left great toe and anesthesia of the perineum. When the patient was allowed to be up, she continued to have saddle anesthesia and complained of numbness and burning in the region of the great toe. Her gait was definitely affected, with a tendency to place the right foot forward, much like a tabetic patient. Two months later she was again seen by a neurologist, who reported "There is slight difficulty in hopping on the right foot, and she can walk on her toes better than on her heels, gait and station are not otherwise affected. There is rather marked weakness of the anterior tibial and peroneal muscles on the right side and of extension of the toes. There is slight weakness of the muscles of the right calf and of plantar flexion of the feet and toes. Some impairment to pinprick was present over the right foot, on both dorsal and plantar surfaces. There was also slight hypesthesia to pinprick in the saddle area bilaterally. This patient presents evidence of injury to the fourth and fifth sacral roots bilaterally and to the first sacral and fifth lumbar roots on the right side."

From the history, improvement was taking place and the prognosis for ultimate recovery was believed good.

#### BREAKING OF THE NEEDLE

The complication of a broken needle has not yet occurred in our series, although of necessity we have used some needles more than five times. Hingson and Edwards<sup>21</sup> reported 12 cases of broken needle out of a series of 850. In 4 instances a small incision was necessary for removal. Their last 250 consecutive procedures were done without a break. Block and Rotstein<sup>22</sup> were unable to remove a broken needle from the canal, so they left it in place.

A broken needle should be removed immediately lest it migrate farther into the sacral canal and become inaccessible.

Cathelin<sup>23</sup> reported a case in which the needle fragment was recovered from the body of the fourth lumbar vertebra at autopsy six months later, and Meeker and Scholl,<sup>24</sup> a case in which removal of the posterior wall of the sacrum was necessary to recover the needle.

The incidence of this complication has been considerably reduced since the development of the malleable needle and catheter technic. The danger can be still further minimized by keeping the patient on her side during labor and then giving an injection and removing the needle just before she is placed on her back for delivery. It is suggested that the needle not be withdrawn until the obstetrician is certain that the cervix is completely dilated and the patient ready for delivery.

#### CHANGES IN BLOOD PRESSURE

Mild and severe vasomotor reactions developed more often than has been reported by most investigators. Shaw<sup>25</sup> in 1925, however, using the single injection method in urologic practice, described changes similar to those which my associates and I have observed.

The relaxation of a patient in labor, after the pains have been relieved and the anxiety has subsided, usually causes a slight fall in blood pressure. Fifteen patients had slight chills and complained of having the "shakes" but not being cold. Such complaints represent a mild vasomotor or toxic reaction. Preliminary administration of a barbiturate may prevent it. In our group of cases there were 27 with a drop of more than 20 mm in systolic pressure. Usually such a change is associated with a feeling of faintness, fatigue and sweating. The face is pale and the pulse weak. Increased respiratory excursion may indicate mild air hunger. One patient complained of severe substernal pain. All the larger changes in blood pressure occurred in patients in whom the level of anesthesia was at or above the umbilicus. The changes undoubtedly were due to splanchnic dilatation as the visceral sympathetic fibers were blocked. Of 39 patients with an anesthetic level at or above the umbilicus, 26 showed drops of more than 20 mm. Two patients definitely had shock reactions, the systolic pressure dropping to zero from 158/110 and 90/60 respectively. In 2 instances slowing of the fetal heart rate was noticed during the period of lowest pressure. Every one of these patients responded to ephedrine sulfate administered hypodermically and oxygen inhalations. In 19 patients the anesthesia was pushed to a high level in preparation for cesarean section. The drop in blood pressure could have been minimized in this group by preliminary administration of ephedrine. Patients with severe heart disease probably would not tolerate the increased cardiac load associated with large drops in blood pressure.

Control of dosage to prevent too high a level of anesthesia should eliminate this reaction in most patients during labor. The semi-Fowler position or elevation of the head of the bed tends to keep the anesthesia at a low level, whereas the Trendelenburg position favors an ascending level. Possibly the addition of epinephrine to the solution would also prevent large drops in pressure.

#### ANTESACRAL INJECTIONS

Owing to variation in the type of sacrum and in angulation of the coccyx it is possible in difficult cases to penetrate the sacrococcygeal joint or the tissue lateral to it so that the point of the needle comes to rest on the anterior surface of the sacrum close to the rectum. This has occurred twice in our series. In both cases there was difficulty in identifying the sacral hiatus. One of the patients had evidence of rickets. In cases in which the anatomy is obscure, preliminary rectal examination with palpation of the sacrococcygeal joint is helpful in preventing this error. If the infant's head is low, it is conceivable that the rectum flattened against the sacrum may be penetrated. The accident occurs more frequently with beginners and in most instances represents carelessness.

20 Hawkins, Robert J. Unpublished data.  
21 Hingson, R. A., and Edwards, W. B. Comprehensive Review of Continuous Caudal Analgesia for Anesthetists, *Anesthesiology* 4: 181 (March) 1943.

22 Block, Nathan, and Rotstein, Morris. Continuous Drip Caudal Anesthesia in Obstetrics, *J. A. M. A.* 122: 582 (June 26) 1943.

23 Cathelin, F. Les injections épidurales par ponction du canal sacré et leurs applications dans les maladies des voies urinaires, *Paris, J. B. Baillière & fils*, 1903, p. 231.

24 Meeker, W. R., and Scholl, A. J. Sacral Nerve Block Anesthesia. *Ann. Surg.* 80: 739 (Nov.) 1924.

25 Shaw, E. C. Epidural Anesthesia for Perineal Prostatectomy. An Experimental and Clinical Study with Report of One Hundred Consecutive Cases. *J. Urol.* 15: 219 (March) 1926.

# COMPARISON OF METHODS WITH REFERENCE TO COMPLICATIONS

Two principal methods are advocated for this type of anesthesia, the malleable needle technic originated by Hingson and Edwards and the catheter modification described by Adams, Lunde and Seldon<sup>26</sup> and Manalan<sup>13</sup>

Since we have used only the malleable needle technic, we do not have two series to compare, however, logically, different methods are devised because they avoid certain complications

The advantage of the catheter technic aside from the fact that it allows greater freedom of movement on the part of the patient is that there is less danger of perforation of the dura or a blood vessel once the needle is withdrawn over the catheter. Three disadvantages are apparent (1) There is more trauma associated with the introduction of the 13 gage needle, (2) this trauma naturally increases the risk of infection, (3) the number of failures should be increased, owing to the difficulties involved in the insertion of the large needle in some patients

With use of the needle technic the complications which are increased in number are (1) the perforation of the dural sac after the needle is in place with subsequent intraspinal injection, (2) the broken needle and (3) the possible trauma inside the canal if the needle is manipulated by the patient moving about on her back

The development of a smaller useful catheter which can be threaded through a 16 gage needle should combine the advantages of the two methods with resulting increased safety

## DO NERVES BECOME REFRACTORY TO LOCAL ANESTHETIC DRUGS?

In general, we have noticed some difficulty in maintaining the effect of the anesthetic that is used over a long period of time. This same observation has been made by Wall<sup>27</sup> and may be due to malposition of the needle. However, the thought has occurred to us that possibly the nerve roots may become refractory to the action of the drug after prolonged anesthesia. We have noticed this phenomenon in 3 cases in which we felt certain that the needle had not become dislodged from its proper place in the caudal canal

Regnier and Lambin<sup>28</sup> noticed a disappearance of the anesthetic action of dilute solutions of cocaine hydrochloride after prolonged instillation of these on the cornea of the rabbit. The possibility of this occurring in peripheral nerves should be investigated

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26 Adams R C, Lunde J S and Seldon T H. Continuous Caudal Anesthesia or Analgesia. J A M A 122 152 (May 15) 1943  
27 Wall David. Personal communication to the author  
28 Regnier J and Lambin S. Sur la disparition de l'action anesthésique de solutions de chlorhydrate de cocaïne en contact prolongé avec la surface à anesthésier. Essais sur la corne du lapin. Anesth et analg 4 497 (Nov.) 1938

**First Description of Pulmonary Circulation.**—Around the middle of the thirteenth century an Arabic physician, Ibn an Nafis described the pulmonary circulation. This is the earliest description we know, and its rediscovery has put an end to the claims for priority of either Michael Servetus (1553) or Realduo Columbus (1559). However it is not probable that Servetus knew of his Arabic predecessor nor has any historical link been established between Ibn an Nafis and Columbus. Whether on the other hand any connection existed between Servetus and Columbus is a question still open for debate—Larkin Sanford V, and Temkin Owsei in *Essays in Biology* Berkeley, University of California Press 1943

# DEFINITIVE TREATMENT OF SEVERE WOUNDS

## LARGE SURFACE TO SMALL AREA

COLONEL JOHN L GALLAGHER  
MEDICAL CORPS, ARMY OF THE UNITED STATES

It is generally understood that the first aim in the practice of surgery and medicine is to get the patient through an ordeal alive, at all times keeping him at the greatest possible distance from the possibility of death. From the surgical standpoint this aim is achieved when the patient arrives at the hospital as a good risk. Yet often the traumatic patient arrives at the hospital in extreme shock, even irreversible shock, when if adequate first aid had been given promptly after injury he would have arrived at the hospital in good physical condition. For example a patient arrives practically exsanguinated by profuse hemorrhage from an otherwise minor wound, the hemorrhage from which could have been readily controlled by a compression dressing. Similar mischances are usual in all forms of injuries whether they are surface wounds involving extensive areas of the body, crushing injuries of moderate areas or severed blood vessels in small area wounds

The medical profession has made great strides in the care of these patients at the hospital, but it is my belief that a great deal more can be done for patients with traumatic injuries during the critical period from the time of injury to the time of admission. Since the care of the patient prior to admission to the hospital is in the hands largely of nonprofessional and only briefly trained persons, treatment must be outlined which will be simple in procedure but most effective in functional result. This prehospital treatment should be such that its principles will be carried on into and through hospitalization. It is to this goal that the present paper is directed

To illustrate my meaning better, a number of cases are presented

Approximately one year ago 22 men were working in a building about 20 by 30 by 10 feet. This building became filled with gasoline fumes, which ignited, resulting in a violent explosion followed by a total fire. Two men were blasted from the building through the only door, one of them receiving a second degree burn forming a 4 inch band around the lower third of the left leg. Otherwise there was no injury to these 2 men. The negative pressure created by the blast slammed the door shut. The inside of the building became entirely aflame, and the 20 men remaining in the building received fatal or serious flash type as well as slow type burns. It was not possible for any of the remaining men to get out of the building until the fire department arrived broke in the door and had the fire under control. In the following confusion 2 of the severely burned victims slipped out of the building ran to a small hospital 3 blocks distant, went into irreversible shock and died without responding to shock treatment. Four were dead when found and 2 died immediately after reaching the hospital. Except for the 2 men who ran from the building the patients were placed on litters and conducted to the hospital by ambulances. This particular hospital had only one operating room and an emergency treatment room necessitating the use of improvised operating rooms

In accordance with hospital rules all attendants immediately took cap mask and gown precautions and by medical officers orders gave every patient ½ grain (0.032 Gm) of morphine sulfate subcutaneously. The dead dying and critically injured practically filled the hallway of the small hospital where they had been placed by the ambulance crews at the direction of the attending surgeon. The stench of the burned human flesh



and clothing added to the horror of the continual cries of pain. The doctors and the nurses present administered morphine to the living and gradually the patients became quiet.

There was a selection made for priority in operation in that the moribund patients were held for shock treatment. The force was divided into teams with each of the most experienced surgeons having an assistant medical officer and nurse. Each team immediately started blood plasma intra-

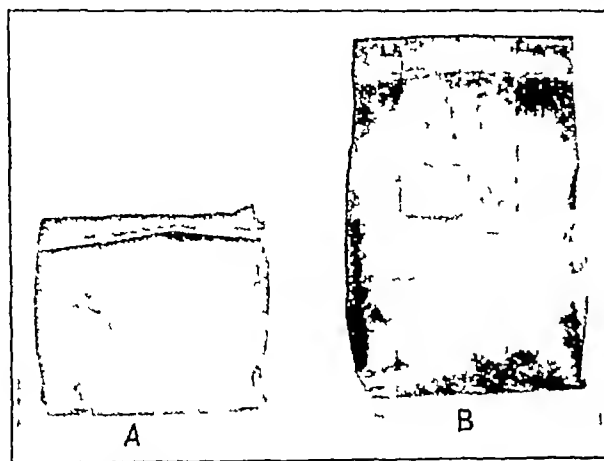


Fig. 1—The reduction in size of the packaged dressings (*A* new type, *B* original) will be more pronounced when the new type is packed by machinery. *A* is the same dressing as represented in figure 2. (Official photograph, U. S. Army Air Forces Technical Training Command.)

venously, and where necessary, cutting down on the vein. They then proceeded to cleanse the wounds with sterile water and sterile whipped white soap, lavaging away the white soap with sterile cotton that had been saturated with saline solution. Then with sterile spring forceps, sharp dissecting scissors or Bard-Parker knives, complete debridement of all wounds was accomplished.

The use of tannic acid-silver nitrate on the trunk and the upper half of each arm was necessary because there was not adequate compression dressing material on hand. If another similar disaster should be encountered, the compression technique would be used entirely, for it is now seen that sufficient materials are on hand.

It is believed that the patients discussed here were well handled under the circumstances in that all who did not die within fourteen hours recovered to return to full duty. However, it is probable that under the present day management of first aid treatment to the severely burned, had this disaster happened at a considerable distance from the hospital, practically none of them would have survived. The 2 men who ran from the scene of the fire to the hospital and went into irreversible shock illustrate the point clearly. Figures 3 to 8 present a comparative case.

To illustrate the first aid treatment of profusely bleeding wounds by the compression principle, another case is briefly discussed.

A civilian employee was painting lines in an airplane parking area of an airport, when an airplane out of control ran over him. The propeller of the airplane struck him at the right midclavicular area, widely opening his thoracic cavity at the apex. An ambulance driver, parked within a few feet of the accident, rushed over with his ambulance, picked up the injured man, placed him on a litter, saw his profuse bleeding but only became more excited by seeing it, and although there were ample compression dressings in the ambulance, raced madly 6 blocks to the outpatient department of the hospital without applying the dressings. An attendant there saw the profuse hemorrhage, grasped a large packaged compression dressing, ripped off the top of it, placed it on the wound, applied compression with the bandage going under the opposite arm pit, thereby forcing the pad down into the apex of the right chest cavity, and effectively stopped the hemorrhage. The

patient was close to exsanguination but was conveyed to the operating room, where he was given plasma, a large blood transfusion, and treatment for shock for two hours without molestation of the dressing. Then, with everything ready, his wound was repaired. He was given another transfusion during the night and still another the next day, following which he progressed to complete recovery.

This case is unusual in that the compression dressing, although at hand, was not used promptly by the excitable attendant. The dressings have been successfully used promptly by personnel in every other similar case in some of which the tourniquet would have been as here, of no avail. Such instances clearly illustrate what compression treatment can do for profusely bleeding wounds. Had this dressing been used by the ambulance driver as he had been thoroughly taught to use it, it is reasonably certain that the patient would not have been so near to dying. Had the distance to the hospital been longer, the patient would have arrived dead.

#### DESCRIPTION OF NEW TYPE DRESSINGS

All five of the first aid dressings described herein embody the compression technique. The original type dressing (labeled *B* in figure 1) was made to simulate the sea sponge as it would be dampened and all ready in moderate compression. The economy of space gained by packing is illustrated by comparing *A* and *B* in figure 1. The new package as reduced by hand pressure only will be smaller when packed by machinery. The new dressings are made to comply with a demand for a more compact packaged dressing to avoid waste space in shipment and to permit the first aid men to carry a more adequate supply in small first aid bags. These dressings when adequately packed, as by machinery, will occupy but little more space than a package of cigarettes, but when released they will have adequate bulk in great depth to cover an area approximately 4 by 4 inches while still in the sponge shape, and when further unfolded, by pulling the short string, they will offer a cover type compression dressing of 36 square inches. The larger dressing is similar to the smaller one, as shown in figure 2 *C*, except that it has a bias cut stockinet bandage anchored to its top. It can also be press packaged for economy of space, but when

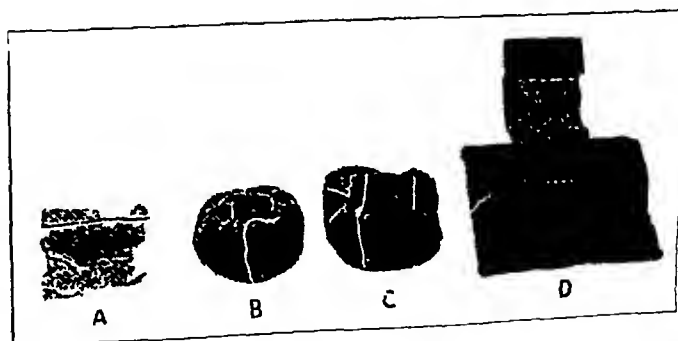


Fig. 2—*A*, new type packaged dressing made impervious by waxing. *B*, dressing with the pressure cap not completely drawn up. *C*, dressing with long string which when pulled leaves the pad ready for use simulating a sea sponge of great depth. *D*, dressing unfolded to cover 36 square inches in good compression. The large dressing unfolds to cover 81 square inches. (Official photograph, U. S. Army Air Forces Technical Training Command.)

released from its compressed package it will have its original large bulky sponge of great depth for safe control of external hemorrhage from large wounds, up to 5 by 5 inches, plus the advantage of an elastic bandage for holding the dressing to difficult contours, e. g. those of the head and shoulders and the groin, with a more

resilient compression This dressing when unfolded by pulling the short string will cover an area of 81 square inches and retain its compression feature

My pack for compression treatment of all extensive wounds and for Koch treatment of burns consists of sixteen sterile pads 9 inches square, each pad containing 8 ounces (225 Gm) of grade 1 mechanic's waste,



Fig 3—Patient injured in a gasoline explosion and fire. There were third degree burns of the zygomatic area of the face, of the nose and both ears the anterior surface of the neck the anterior surface of the chest the anterior and lateral surfaces of the upper half of each arm and of the shoulder and of the forearms and the hands. The remainder of the face including the upper eyelids the mouth and the chin showed second degree burns. The aforementioned areas were bordered by wide areas with first degree burns. The primary treatment was completed within two hours after injury. (Photograph by U S Army Air Corps)

covered by one thickness of 44-40 mesh gauze overlying two layers of coarse gauze. Four of the dressing pads have a 5 inch by 5 yard roller bandage of bias cut stockinet anchored to them. The pack also contains two operating caps and three face masks (the extra mask for the face of the patient). The entire package is put up in maximum compression for the purpose of economizing space in shipment to armed forces and in carrying by personnel and to permit hospitals generally to maintain adequate sterile supplies of the dressings for disasters. The final container will be tin 8 by 8 inches. Thus in this small cube there will be adequate, smooth, soft, compressible, sterile surgical pads and elastic bandages to cover 1296 square inches of body surface (both upper extremities, shoulder girdles and axillas) and also finger individualizer strips, caps and masks. It is further proposed to place instructions on the outside of the package for the handling of severe wounds (burns and other types) in this manner. The principal ingredient of these dressings is mechanic's waste (cotton waste) a waste thread material from textile mills and therefore most inexpensive and plentiful. Grade 1 of this material can be bought in Chicago for 9 and a fraction cents a pound. Compare this price with that of absorbent cotton or that of surgical gauze and the economy will be apparent. From the standpoint of resilience mechanic's waste is the one adequate substitute for the unobtainable sea sponge. Neither absorbent cotton nor waste cotton nor surgical gauze can compare with mechanic's waste in the all important matter of giving resilience to compression dressings. It is a fur absorbent and is readily sterilized.

When firm, safe bandaging is applied over a wound coverage such as this, with ample bulk and good resilience, the dressing continues to cover the wound indefinitely, whereas a dressing of poor resilience will slide off the wound or turn to expose it even if the bandage is applied so tightly as to cause constriction. This is particularly true when there is a circular bandage about an extremity or the thorax where there is a constant

change in the circumference. If there is a bulk of resilient material beneath the bandage, it will give as the bandage tightens and will spring back to take up the slack as it loosens to hold the dressing firmly in place. If, on the other hand, there is not resilience in bulk, the dressing pad becomes packed, or the threads of the bandage give (something must give if there is not ample resilience), and the dressing loosens and slips from the wound. This feature of the resilient bulk of the dressing giving when the circumference of a portion of the body increases is an important safety factor in that it prevents a circular bandage about an extremity from accidentally becoming an effective tourniquet subsequent to enormous edema formation or when an arm or a leg becomes flexed after application in an extended position. It is difficult to obtain constriction as one bandages over a bulky dressing of good resilient material when the bandage is going on smoothly in one direction. However, if there are two bandages being applied in opposite directions with each offering force for the other to be pulled against, constriction is likely and gangrene of a member is a real danger.

This entire series of dressings has been devised with the thought of simplifying, for nonprofessional or briefly trained personnel, prompt optimal first aid treatment for the injured. This procedure will enable such personnel to apply efficient, effective dressings, which can be applied by them and maintained in their aseptic condition. The dressing when so applied will serve to control bleeding without the use of the tourniquet, give compression therapy to the wound area, bring about a splinting effect to the wound, so pad an extremity that a hard rigid splint can be applied without further padding and give protection from outside contamination by the sterile bulk of the dressing. Thereby many of the things which cause the patient to go into shock and on into irreversible shock are arrested early and a safe definitive treatment is instituted. The urge to rush is abated and the many injuries done to the patient in frantic haste to get him to the hospital are avoided.



Fig 4—Two days after injury. The patient is in a canopy bed. The sheets pillow case and other material reflect a sterile technic. All visitors and attendants are required to comply with cap mask and gown regulations. As shown the entire head the upper part of the neck the forearms and the hands have voluminous compression dressings of cotton waste the ears are fixed with supersaturated absorbent cotton molds. The eyes have been treated with yellow mercuric oxide ointment beneath the bandages. The remainder of the body (chest neck and upper arms) has been given the standard tannic acid silver nitrate eschar. (Photograph by U S Army Air Corps)

The patient who would otherwise arrive at the hospital in critical condition because of avoidable shock will arrive there in good shape with the fundamental principles of treatment already under way.

The advantages of the described compression dressings may be summarized as follows (1) They control hemorrhage from the wound and thus the use of the tourniquet with its hazards tedious timing and releasing is avoided, and more important they control hemorrhage from wounds where the tourniquet is not applicable,



Fig. 5—Patient on the third day. The eyes have been exposed by removing the special dressings in that area. There is no edema of the lids or surrounding areas to speak of. Notice the areas of fluid formation beneath the eschar and one or two areas in which it was necessary to excise the eschar (upper right area of chest, left axilla). Thus far the patient has directed his complaints to the tannic acid areas claiming complete comfort for the hands, the forearms and the head. (Photograph by U. S. Army Air Corps.)

(2) they insure ease and rapidity of aseptic application of primary adequate dressings by the nonprofessional attendant, (3) they facilitate application of dressings to dependent parts, as the under surface of the arm, the groin or the under surface of the chin, (4) they bring a splinting effect to the wound and its immediate area, (5) by pressure they prolong viability of tissue through aiding return circulation from the wound, (6) they obliterate spaces and crevices in wounds by this compression, (7) by their sterile bulk they form a barrier against added contamination, (8) they create a safety factor in that they may remain as originally applied without additional adjustments or changes for a number of days when necessary, as under battle conditions, (9) they permit easy, as well as efficient, application to any wound with or without spurting vessels under such unfavorable conditions as high wind, semidarkness and cramped close spaces as in multiple passenger combat planes, (10) they make a superior type of first aid treatment available at or near the scene of injury for extensive surface injuries, such as burns, frozen members (frost bite), severe abrasions or crushing injuries, and (11) they afford a dressing the bulky resilience of which will give maximum comfort and permit firm, safe bandaging, adequate to hold it indefinitely in place.

#### PRINCIPLES OF THE COMPRESSION TREATMENT

It is my opinion, substantiated by outstanding surgeons of my acquaintance, that the compression treatment of burns is by far the most logical and successful. My own particular theories as to the success of compression treatment for wounds, whether burns, frost bite, traumatic or surgical wounds, are discussed briefly. The compression aids return circulation from the wound and in so doing tends to prevent edema. In an extensive surface wound, such as a burn, plasma is lost from the blood stream by escape into the tissues, the principal loss being into the tissues and not as formerly thought entirely out of the body by evaporation and drippage. It is therefore most important that the compression treatment be instituted at the earliest possible moment

to prevent shock from hemoconcentration occurring after extensive surface wounds or crushing injuries. Since fluid escaping into the tissues and remaining there as edema will result in the tissue cells being placed in a nonconductive medium, which also seriously compresses them and isolates them from the principal functions of the blood, namely (a) oxygenation, (b) nutrition, (c) phagocytic action and (d) elimination of waste products, the prevention of this series of events is to be desired.

It is firmly believed that the additional loss of skin experienced in the tannic acid-silver nitrate method of treatment of severe burns is mainly due to the aforementioned deprivation of the circulation and only slightly to the chemical action of the *NaO* agents. The cells which die do so largely because of anoxia of the tissue cells, but infection resulting from delayed phagocytic action also plays a part. Loss of nutrition and failure of elimination of waste products from the cells are due to the abnormal pressure and physiologic isolation resulting from surrounding edema. This theory is substantiated by the fact that severe burns often become infected whatever type of topical application is used unless the compression technic is employed. It is well known that infection rarely occurs when burns are promptly and properly treated by compression whether or not a medicinal preparation is placed on the burned surface. The rapid improvement of a burned infected surface following compression treatment further substantiates this theory.

The modern concept that a burn is a large surface traumatic wound is of paramount importance in present day treatment. The extensiveness of the wound makes it more hazardous from the standpoint of infection than the ordinary traumatic wound, since there is more surface to receive contamination and a greater area over which the cells of the blood must be distributed in their phagocytic action against invading organisms.

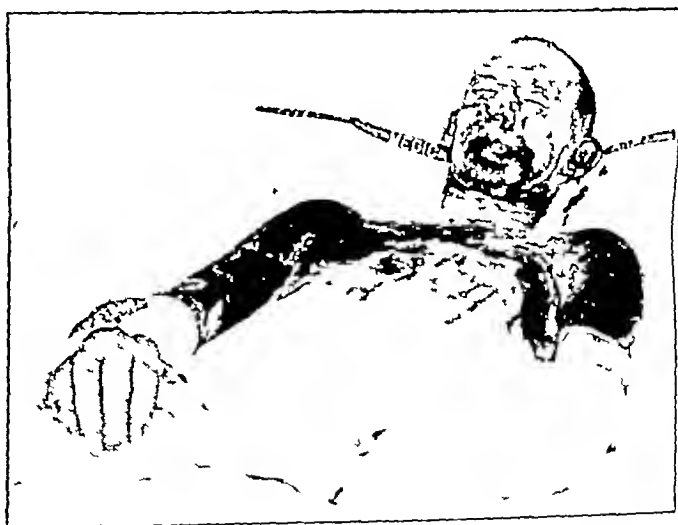


Fig. 6—After ten days the dressing is removed from the head. Note the absence of edema of the surgically clean wounds of the head, upper part of the neck and right forearm. The left ear is surgically clean although bleeding slightly after removal of the dressing. The patient begged that the dressing of the badly burned left forearm and hand not be disturbed since it was so comfortable. (Photograph by U. S. Army Air Corps.)

Prompt precaution against contamination is indicated whatever the nature of the injury, and the greater the raw surface of the wound the greater the need for promptness in adequate protection. With extensive surface injuries, such as burns, severe abrasions or

multiple lacerations, the need for prompt protection against added contamination is even overshadowed by the need to get the wound under adequate treatment. Certainly when such treatment, if initially applied, can serve as a control for severe hemorrhage from the external wound, as a protection against added con-

therapy should be accomplished prior to departure. The patient should not be subjected to transportation if he is developing shock until it is controlled, else it is likely to continue into irreversible shock and subsequent death.

#### RECOMMENDED PROCEDURE

It is proposed that an adequate simple sterile compression dressing be applied to a severe burn or other large surface wound immediately at or near the scene of injury, especially if the patient is to be moved a considerable distance. The technic is not involved. The persons administering the treatment obtain the multiple pad pack. They remove the top covering and put on the caps and masks taken from the pack. They then apply the patient's mask. Their hands are washed in soap and water followed by alcohol. The patient is given morphine sulfate  $\frac{1}{4}$  to  $\frac{1}{2}$  grain (0.016 to 0.032 Gm) subcutaneously and the first unit of plasma and the chemotherapy are started. The wounds are exposed by cutting away clothing as indicated, and every effort is made to keep the patient warm if the outside temperature is low. The plywood frame which opens to form a splint is then removed from the top of the pack. The draw string is pulled from the end of the muslin bag, presenting two finger individualizers. The first pad will be lifted off by its attached bandage and will be placed on one extremity of the wound. Then subsequent pads will be obtained, placed side by side and



Fig 7—Patient whose chest, ears, nose and zygomatic areas were apparently burned to about the same degree as he appeared eighteen days after injury. Notice how much further advanced toward recovery are the head, forearms and hands, comparatively. (Photograph by U. S. Army Air Corps.)

tamination and as a preventive of edema with its harmful effect on cellular metabolism, it will be advantageous to start this treatment early. To start treatment prior to contamination is the ideal. However, if contamination has already taken place it is of utmost importance to get this treatment under way (1) before the contamination becomes an actual infection, (2) before the increasing loss of fluid from the blood stream causes hemoconcentration with progressive shock and (3) before the fluid elements of the blood have escaped into the tissues to affect adversely cellular metabolism. Compression dressings on burns of the arms, the legs and the trunk, when approaching the total area of these members, help to raise the blood pressure of the patient in shock by compressing the blood vessels in the area and displacing the blood to the larger vessels and the heart for a more favorable volume. I have seen severely burned patients who already were suffering with shock react favorably immediately after the application of such compression dressings to the entire upper and lower extremities.

Many lives can be saved if optimal treatment will be given patients having severe or extensive wounds before they are subjected to transportation. (When indicated, treatment should be continued while en route.) Prompt effective control of external hemorrhage, proper compression dressing and splinting of all severe wounds, administration of a sedative, intravenous injection of plasma and institution of chemo-



Fig 8—After thirty five days some areas in the portion that received open treatment require a skin graft. The left ear has cupped a little but the deformity is not a noticeable one. There have never been indications of infection or edema or complaints of pain in the areas treated by voluminous dressings. None of these areas have any indication for skin grafting. (Photograph by U. S. Army Air Corps.)

fixed with the bandage under moderate pressure. The fourth pad will have another bandage and so on until the package is used up. Other packages are obtained as needed for complete coverage of wounds in compression. The splints from the frames may then be applied without padding.

The fine mesh 44-40 gauze in my opinion is the ideal substance for contact with the wound. If loose gauze is placed on the wound, it should be saturated with isotonic solution of sodium chloride to keep it smoother, as in the Neal Owen method. Here the gauze is held smooth by the pad to which it is attached. It is my belief that ointments, dyes, topical antiseptics and the like are harmful in certain instances and superfluous in most. However, chemotherapy given orally or intravenously is essential.

These dressings on burns of patients arriving at the hospital should remain undisturbed as treatment unless there is information on the diagnosis card, or otherwise of gross débris, which would necessitate cleansing, débridement and subsequent reapplication of a compression dressing. Otherwise, to change dressings would subject the patient to added hazards of contamination and perhaps increase his shock. The compression dressings on lacerated and other severe wounds should be removed in a proper surgical unit under aseptic conditions with full protection against respiratory contamination and with provisions such that adequate surgical care can be complete. Even in the case of lacerated wounds it is better to make x-ray search for foreign bodies and leave the dressings intact, if too long an interval has elapsed for safe surgical intervention, until indications arise for their removal. In any case, treat the patient in a logical conservative manner to bring him through the critical period alive, leaving well enough alone. See to it that the blood volume is kept up, that unavoidable losses of blood plasma or cells are replaced, prevent or treat shock and promptly administer adequate chemotherapy. Keep an accurate record of the fluid intake and output and adjust the intake of fluid accordingly.

#### SUMMARY

1 The series of compression dressings offered makes possible adequate treatment of wounds, including the extensive surface wounds of burns and frost bite.

2 Three of the compression dressings are packaged with maximum compression for economy of space in shipment in the war effort and in carrying by personnel and to permit hospitals generally to store easily an adequate supply of sterile compression dressings for instant use in mass disasters.

3 The sterile ready-to-go compression dressings are devised to simplify the dressing of severe wounds so that the briefly trained person may become proficient in their application.

4 The oval pads of the individual dressings are designed to have sufficient firmness to collapse injured vessels and stop hemorrhage but to have ample resilience to permit circulation beyond the wound and to the tissue of the wound through the uninjured blood vessels, thus obviating the use of the tourniquet with its hazards.

5 The two new type dressings have a dual purpose, in that they may serve as thick spongelike pads for quick control of external hemorrhage or, by unfolding may become wide coverage compression dressings.

6 The economy and saving of strategic materials is apparent.

Hospital care and treatment are today superior, generally, however, the critical period from the time of injury to the time of admission to the hospital offers room for improvement. This has been an effort in that direction.

## A WORKING CLASSIFICATION OF THE CAUSES OF ABORTION

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The traditional method of classifying the causes of spontaneous abortion divides them into two major groups, fetal and maternal, each of which is again divided into numerous subgroups more or less ill defined. As a practical basis for diagnosis and treatment such an analysis tends to be confusing rather than helpful.

Every accomplished abortion includes three events: death of the embryo, separation of the ovum from its attachments and expulsive uterine contractions. Any one of these may be the primary event in a given case followed sooner or later by the other two. Thus abortion can be induced by killing the ovum with x-rays, by dislodging it with the curet or by provoking effective uterine contractions with bougies. In the same way spontaneous abortions are initiated by accidents of three general types. A consideration of the causes from this point of view clarifies certain aspects of the problem of clinical management.

#### DEATH OF THE OVUM

In some cases of abortion the embryo dies days or even weeks before there is any evidence of ovular detachment in the form of bleeding or of expulsive uterine contractions in the form of cramps. In others the embryo, already moribund, dies after some slight appearance of bleeding or cramps but before these symptoms are well established. Such cases are of two sorts. In the first the trouble is hereditary, present from the moment of conception. Faults inherent in the germ plasma may produce anatomic defects, more often they lead simply to a state of insufficient vitality. In the second sort of case the trouble is environmental. A normal ovum succumbs after nidation either because of malnutrition from poor implantation or, less often, as a result of acute or chronic disease in the mother.

To speak first of the last mentioned item, situations in which maternal ill health kills a normal embryo in the uterus offer good examples of primary ovular death. In practice they are relatively uncommon, indeed, it is surprising how sick a woman can be without interruption of her pregnancy. Chemical poisoning, notably by lead, and toxemia from focal infection predispose to abortion, as do also thyroid disorders and diabetes. Malnutrition and avitaminosis appear to have the same effect though less than one might expect. There is a high incidence of abortion in febrile diseases such as scarlet fever, malaria and pneumonia, and while in some of these cases the primary event is uterine contractions provoked by high temperature or anoxemia, more often the embryo dies first. On the other hand, maternal syphilis, for all its disastrous consequences in the second half of pregnancy, is relatively harmless to the ovum during the early months.

Mall<sup>1</sup> and others<sup>2</sup> have found that upward of 50 per cent of aborted embryos are pathologic. In Mall's opinion these malformations without exception are produced by environmental factors, chiefly by abnormalities of the uterine mucosa which interfere with nidation.

Read before the New England Obstetrical and Gynecological Society in Boston, Dec. 2, 1942.

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<sup>1</sup> Mall, F. P. A Study of the Causes Underlying the Origin of Human Monsters, *J. Morphol.* 19: 1 (Feb.) 1908.

<sup>2</sup> Hertig, A. T., and Edmonds, H. W. Genesis of Hydatidiform Mole. *Arch. Path.* 30: 260 (July) 1940.



tion, prevent regular growth of the trophoblast and thus affect the nutrition of the embryo. He states categorically "It is perfectly clear that monsters are not due to germinal or hereditary causes."

There is now, however, a considerable body of evidence to show that defects inherent in the germ plasma can and do cause weakness in the embryo, if not actual malformations. Lethal factors in heredity are well known in lower animals. Something closely analogous has been demonstrated in human beings by Levine and his co-workers,<sup>3</sup> who find that an Rh negative pregnant woman with an Rh husband may produce, as a result of immunization with the Rh fetal blood, anti Rh agglutinins which can penetrate the placenta and hemolyze the blood of the fetus. The type of embryonal weakness most often encountered in practice is due to relative infertility of the spermatozoon or of the ovum, this being caused in turn by constitutional faults in one or both parents such as endocrine disturbances, chronic intoxications, debilitating diseases and poor hygiene. When disorders of this sort are severe they prevent conception, when present in milder degree they deprive the fertilized ovum of that vital energy necessary to carry it through pregnancy. The foregoing facts and others well supported by clinical and laboratory observations have led some workers to ascribe the majority of primary ovular deaths to preconceptional rather than postconceptional influences.

The literature of the past few years contains numerous papers<sup>4</sup> reporting 80 per cent or thereabouts of successes in the progesterone treatment of both threatened and habitual abortion. The fact that a majority of pregnancies in which abortion is threatened can thus be carried to term, with the birth of normal babies, is proof positive that the embryos are not inherently defective. It likewise sustains the views of Mall, for the protective action of progesterone on the decidua would operate specifically to prevent the pathologic sequence of events envisaged by him. Equally definite conclusions about the ovum cannot be drawn from the reports on habitual abortion, since that diagnosis is often little more than presumptive. No doubt the administration of progesterone from the beginning of pregnancy can act prophylactically in the same way as it does therapeutically after a threat of trouble has appeared. When constitutional treatment of one or both partners is carried out before the start of pregnancy, it may be assumed that increased fertility in the parents results in the survival of a certain number of embryos which otherwise would not have had enough vitality to complete their intrauterine development.

#### SEPARATION OF THE OVUM

The commonest initial event in spontaneous abortions is some degree of ovular separation. Bleeding was noticed before cramps in more than 80 per cent of my cases. Usually the first separation is not extensive, with proper treatment, or even without, healing may occur so that the pregnancy continues uneventfully. Under less favorable conditions further detachment takes place, the embryo weakens and dies, contractions supervene and abortion becomes inevitable.

There is probably no agent short of instrumental intervention which will bring about the detachment of a normal ovum properly implanted in a normal uterus. Healthy fruit does not fall from the tree until it is ripe.

Primary separation of an ovum before the death of the embryo or the onset of expulsive contractions indicates therefore some defect in its attachments, either in the decidua or in the trophoblast.

The formation and the maintenance of a normal decidua depends on two factors: adequate endocrine stimulation and a healthy endometrium capable of responding. As Browne and his associates<sup>5</sup> point out, between the seventieth and ninetieth days of most pregnancies there occurs a transfer from the corpus luteum to the placenta of the function of producing progesterone essential to the integrity of the decidua. If at this critical time or at any other the secretion of progesterone is insufficient (an event often evidenced by a fall in the excretion of pregnandiol), the result is regression of the decidua, disruption of its tissues by internal hemorrhages and separation of villi. A point often overlooked by clinicians is the role of estrogen of which an adequate production is necessary to prepare the endometrium, pregnant or nonpregnant, for the action of progesterone.

Less frequent as a cause of poor decidual formation is inability of the endometrium to respond to physiologic stimulation. An important item in this category is uterine hypoplasia, which would figure more largely than it does in the causation of abortion were it not that the accompanying hypoplasia of the ovaries makes conceptions few and far between. Inflammatory conditions likewise are more apt to produce sterility than abortion. The older literature has much to say about "decidual endometritis." This term usually represents a pathologic misconception, interpreting as inflammation the dissolution and the infiltration with leukocytes, which are nothing more than a phase of the regression that follows withdrawal of progesterone. Nevertheless infections of the decidua, the placenta and the embryo itself do occur, either through the blood stream or by invasion from the vagina. The hyperplastic endometrium, an end result of more or less prolonged estrogen-progesterone imbalance, can rarely prepare itself for the implantation of an ovum. The same is true of the endometrium of the subinvolved uterus. This fact may sometimes account for a series of very early abortions, perhaps not recognized as such.

Defects in the trophoblast naturally predispose to ovular separation. Mall reports that the study of comparatively normal embryos often shows that the membranes are decidedly pathologic, the villi being deformed, diseased, atrophic or hypertrophic. Here again as in the matter of ovular death it is a question whether the disorder is primarily an imperfection inherent in the ovum or poor nutrition from faulty implantation. The theory has been advanced that the type of placental infarction seen in chronic nephritis may have its origin in disease of the young blood vessels of the chorion.

#### EXPULSIVE UTERINE CONTRACTIONS

In a minority of cases the threat of abortion is first announced by symptoms of uterine contraction. These commonly start as low backache, with dull pain and a sense of weight in the pelvis, if the process is not checked, they soon develop into rhythmic cramps of increasing severity. Cramps without bleeding or followed by a show of bright blood are consistent with the possibility that the ovum is still normal. But when pains have been preceded by days of spotting or brown-

<sup>3</sup> Levine Philip, Burnham I., Man Katzin E. M. and Vogel Peter. The Role of Immunization in the Pathogenesis of Erythroblastosis Fetalis. *Am J Obst & Gynec.* 42: 925 (Dec.) 1941.

<sup>4</sup> Holz Jacob, Parker Elizabeth and Kaufman M. S. Treatment of Recurrent and Threatened Abortion. Report of Two Hundred and Twenty-Six Cases. *J. Clin. Endocrinol.* 1: 838 (Oct.) 1941.

<sup>5</sup> Browne J. S. L., Henry J. S. and Venning E. H. The Significance of Endocrine Asays in Threatened and Habitual Abortion. *Am J Obst & Gynec.* 38: 927 (Dec.) 1939.

ish staining, one may suspect that the ovum is dying or dead and that the uterus is preparing to rid itself of an embryo which it must inevitably lose.

Apart from any question of endocrine control there are several anatomic conditions which make growth of the pregnant uterus beyond a certain point difficult if not impossible. Reynolds<sup>6</sup> presents evidence to show that tension on the uterine wall is a factor exciting contractions. The hypoplastic uterus is subject to this handicap because of the relatively large amount of connective tissue in its myometrium. Retrodisplacements even with adhesions usually correct themselves during pregnancy, but if the growing uterus becomes incarcerated under the sacral promontory, the mechanical situation soon reaches a crisis. Intramural fibromyomas may create a state of tension to which the uterus cannot adapt itself. The same is occasionally true of deep lacerations of the cervix with extensive scar tissue.

Various external influences evoke contractions in the pregnant uterus. Falls, other bodily injuries and surgical operations can have this effect. Coitus during pregnancy is generally harmless if one may judge by the experience of the large majority of patients, in some cases, however, it undeniably initiates abortion. Violent and painful peristalsis of the intestine may bring on reflex uterine contractions, such action is the aim of many emetic drugs. Hunner<sup>7</sup> has called attention to the fact that a similar result ensues in disorders of the kidneys, ureters and bladder. Occasionally abortion is started by a psychic or emotional shock.

It is well known that in response to each of the two sorts of stimuli just described (mechanical hindrances to growth and external violence) individual uteri react with widely varying degrees of promptness and vigor. Under apparently identical conditions attempts to induce abortion or labor will fail in one case and succeed easily in another. Such behavior postulates a factor of uterine irritability, which in the light of present knowledge would seem to be chiefly if not altogether endocrine in nature. On this subject there has accumulated in the past few years a great number of clinical and laboratory data, some of them contradictory and some inconclusive. The sum total of evidence leads to a few tenable conclusions which may be accepted provisionally as a basis for practice.

Estrogen activates the uterine musculature and tends to stimulate contractions, progesterone has a sedative or inhibitory effect. One might therefore be tempted to assume that excessive muscular activity is due simply to a deficiency of progesterone, either relative to estrogen production or absolute, and that replacement therapy is all that is required to correct the trouble. In some cases of threatened abortion this is no doubt true, as the clinical reports indicate. In general, however, more complicated problems of endocrine physiology are involved. Hamblen<sup>8</sup> points out that the apparent failure of a hormonal function does not prove an insufficiency of the hormone in question, it may occur in the presence of an excess, and in that event attempts at replacement therapy produce undesired results. Specifically, he believes that large doses of progesterone may precipitate abortion by depressing the intrinsic progesterone-pregnandiol metabolism.

While the direct action of estrogen on the myometrium is antagonistic to that of progesterone, there

is a synergism of the two hormones in the sense that estrogen serves to support the corpus luteum and to favor the utilization, if not actually the production, of progesterone. Heckel and Allen<sup>9</sup> were able to maintain the corpus luteum of pregnancy and to inhibit parturition in rabbits by injections of estrogenic substances. Karnaky<sup>10</sup> obtained good results in the treatment of both threatened and habitual abortion with massive doses of diethylstilbestrol. Attempts to induce therapeutic abortion by giving large amounts of estrogen and following this with posterior pituitary injection, sometimes also with castor oil and quinine, have been almost uniformly unsuccessful. These facts suggest that estrogen may act indirectly, through an increased production of progesterone, to depress myometrial activity.

Everything considered, it appears that the main cause of abnormal uterine irritability in early pregnancy is an insufficiency of that progesterone effect which is necessary to check the oxytocic action of the posterior lobe of the pituitary. The guiding principle of treatment should be the reestablishment of a normal estrogen-progesterone balance with small doses of one or the other hormone as needed. Vaginal smears provide a valuable method of determining the indications.

#### A WORKING CLASSIFICATION OF CAUSES

As cases of threatened abortion present themselves in practice it is frequently impossible to recognize in what way the process began. Separation of the ovum and death of the embryo may be going on *pari passu* while at the same time the irritable uterus shows signs of activity. Nevertheless the fact remains that in every case the process starts with one of three events. That being so an analysis of the causes of these events offers a logical working classification of all the causes of abortion as far as they are known. It also suggests lines along which further study of the problem might be undertaken. The major groupings of the classification proposed in this paper are as follows:

- I Death of the ovum
  - A Hereditary faults
    - 1 Lethal and sublethal factors in germ plasma
    - 2 Low vitality due to infertility of parents
  - B Environmental faults
    - 1 Malnutrition from defective implantation
    - 2 Acute and chronic maternal diseases
- II Separation of the ovum
  - A Abnormalities of decidua
    - 1 Insufficient endocrine stimulus
    - 2 Insufficient endometrial response
  - B Abnormalities of trophoblast
- III Expulsive uterine contractions
  - A Factors exciting contraction
    - 1 Mechanical hindrances to growth of uterus
    - 2 External violence
  - B Excessive uterine irritability

#### CONCLUSIONS

Some twenty years ago a clearer definition of the causes of involuntary sterility pointed the way to improved diagnostic and therapeutic methods which have more than doubled the number of successful results obtained.

There is need for an equally systematic approach to the closely related problem of spontaneous abortion. The first step should be a comprehensive and critical survey of the etiology of this type of pregnancy wastage.

475 Commonwealth Avenue

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THE BIOSYNTHESIS OF THIAMINE  
IN MAN

AND ITS IMPLICATIONS IN HUMAN NUTRITION

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The thiamine requirements of man are not known with accuracy. The daily allowances recommended by the National Research Council's committee on medical nutrition were based on three experimental studies of induced thiamine deficiency in human volunteers<sup>1</sup> which did not show very close agreement in regard to the minimal requirement. The difficulty encountered in experiments of this kind, one which we have experienced ourselves, is the great variation in the thiamine content of natural foods, making it next to impossible to maintain a constant intake when such foods are given. In order to avoid this difficulty and to control thiamine intake accurately we undertook experiments on a synthetic diet in which vitamins were supplied exclusively by a vitamin mixture given with each meal in weighed amounts.

The subjects of this study consisted of 9 adolescent young adult males from 16 to 23 years of age, living a sedentary life in an institution. Their diet, which was furnished in quantities approximating 40 calories per kilogram, consisted of vitamin free casein, crisco, dextrin-maltose, a mineral mixture<sup>2</sup> and a vitamin mixture<sup>3</sup>. The food was mixed together to form a somewhat granular dough, which was given in equal quantities at each of the three meals. The subjects soon became accustomed to this food and ate it with every appearance of relish. In all, this monotonous regimen has been continued for eighteen months during which time weight and vigor have been maintained.

The plan of the experiment was to vary only the thiamine intake, reducing this very gradually from an initial level of 1 mg per day in order to ascertain the minimum thiamine intake that would prevent thiamine deficiency. The subjects were given periodic physical examinations, their blood and urine were examined routinely. Electrocardiograms were taken from time to time, and occasional roentgen observations were made on the motility of the gastrointestinal tract. The thiamine excretion in the urine was followed daily, using the "fasting hour" excretion test described by us,<sup>4</sup> occasional observations were also made on the twenty-four hour urinary excretion of thiamine and on the blood pyruvate.

From the Department of Pediatrics Johns Hopkins University. This study was supported by grants received from Mead Johnson and Company, the Milbank Memorial Fund and the Williams-Waterman Fund for the Study of Nutritional Deficiencies.

1 Jolliffe, Norman Goodhart, Robert Gennis Joseph, and Cline, J K. The Experimental Production of Vitamin B<sub>1</sub> Deficiency in Normal Subjects. *Am J M Sc*. 1938; 198 (Aug) 1939. Williams R D, Mason, H L, Smith B F and Wilder R M. Deficiency and Thiamine Requirements of Man. Further Observations. *Arch Int Med* 60: 721 (May) 1942. Elsom K, O Shea, Reinhold J G, Nicholson J T L and Chornock Charlotte. Normal Requirements for Thiamine. Some Factors Influencing Its Utilization and Excretion. *Am J M Sc*. 202: 569 (April) 1942.

2 Cox Warren M Jr and Imboden, Miriam A. Purified Diet Satisfactory for Growth Reproduction and Lactation in Rats. *Proc Soc Exper Biol & Med* 74: 443 (May) 1936.

3 This mixture furnished the following daily quantities of water soluble factors which were divided in three equal doses, one of which was given at each meal: ascorbic acid 25 mg, riboflavin 1 mg, nicotinamide .5 mg, calcium pantothenate 1 mg, pyridoxine 1 mg, choline chloride .5 mg, inositol 1 mg, para-aminobenzoic acid, 1 mg, thiamine quantity varied as described. In addition, 5 drops of Mead Johnson cod liver oil concentrate was given daily.

4 Holt L Emmett, Jr. The B Vitamins and Certain Problems They Present to the Practicing Physician. *Pennsylvania M J* 46: 451 (Feb) 1943.

RESULTS

During the course of many months the thiamine intake was gradually reduced without encountering any clinical or laboratory evidence of thiamine deficiency. Thiamine excretion in the urine fell to negligible figures when the intake was reduced to 0.4 to 0.6 mg per day. By the ordinary thiochrome procedure zero thiamine values were commonly found, but by a more sensitive modification developed by one of us<sup>5</sup> it was possible to demonstrate that quantities up to 2 or 3 micrograms per hour and from 15 to 25 micrograms a day were still excreted in the urine. With further reductions in the thiamine intake no further decrease in urinary thiamine was observed. Eventually, when the subjects had remained on thiamine intakes between 0.1 and 0.2 mg per day for months, thiamine was omitted altogether from the diet. In the course of the next three to five weeks, 4 of the 9 subjects developed definite clinical evidence of thiamine deficiency (neuritis or edema, in association with anorexia and sometimes vomiting), 1 other subject developed questionable evidence (anorexia and vomiting only) and the remaining 4 subjects showed no signs of deficiency during a seven weeks period of observation.

TABLE 1—Output of Free and Combined Thiamine in Feces of Patients on a Completely Thiamine Free Diet

(Figures represent micrograms excreted per day an average of periods of one week's duration)

Subject	Symptoms of Thiamine Deficiency	Thiamine in Feces			
		Period 1		Period 2	
		Free Thiamine	Combined Thiamine*	Free Thiamine	Combined Thiamine
C G	Present	9.8	152	8.5	22.4
H K	Present	5.0	0	4.5	0
A P	Present	4.7	111	5.5	0
R A	Present	11.5	73	15.6	35
S B	Questionable	25.0	217		
C P	Absent	250	40	507	120
G B	Absent	52	125	37	19
D K	Absent	143	8	182	25
J S	Absent	53	53	43	201

\* Indicates thiamine liberated by treatment with clarase

Since it seemed likely that the reserves of thiamine had been greatly depleted by the prolonged period of low intake even before the completely thiamine free regimen was instituted, it would have been anticipated that none of these subjects could withstand complete withdrawal for more than a few weeks. An explanation was therefore sought for the failure of the remaining 4 subjects to develop deficiency. Repeated examination of the diet failed to show any trace of thiamine, examination of the stools however provided very illuminating information. It was found that the 4 subjects who had developed deficiency had almost no free thiamine in their stools. A somewhat larger amount of free thiamine was present in the subject whose symptoms were questionable, whereas each of the subjects who remained free of symptoms had large quantities of free thiamine in the feces (table 1).

COMMENT

It will be noted that the stools of most of the subjects contained considerable amounts of combined thiamine in some combination that yielded free thiamine on treatment with clarase. However the close correlation between the symptoms and the low value of free thiamine and the lack of correlation between the

5 Najjar Victor A. Unpublished observations.



symptoms and the combined thiamine suggests that the latter may be in a form unavailable to the body. The source of the thiamine in the feces remained to be explained.

Two possibilities to be considered were (1) that intestinal bacteria were manufacturing thiamine, a phenomenon that is known to occur in the rat under certain conditions and in the rumen of certain ruminant animals, (2) that the stores of thiamine in the body had not been completely exhausted and that the fecal thiamine represented an excretion into the intestine. The latter alternative seemed rather unlikely in view of the fact that urinary thiamine excretion had for many months remained at extremely minute levels. The possibility of thiamine excretion into the intestine was tested by administering 50 mg. of thiamine intravenously to 1 subject daily for one week in order to find out whether this was followed by an increased thiamine content of the stools. A negative result was obtained.

In order to obtain direct evidence for the production of thiamine by the intestinal bacteria one of the symptom free subjects (G. B.) was given succinylsulfathiazole by mouth 1.5 Gm. every four hours for one week. The feces of this subject showed a prompt reduction in free thiamine, from the previous values of 37 and 52 micrograms per day it fell within a week to zero reappearing a few days after the drug was discontinued. Conceivably this negative result may have been due to direct destruction of thiamine by succinylsulfathiazole or to some interfering effect of the drug on the thiamine determination. Both these possibilities have been explored and ruled out. It is thus clear that the thiamine in the feces had its origin in the intestinal bacteria.

It is conceivable that the fecal thiamine was formed only by bacteria present in the large intestine, a site from which absorption of thiamine is perhaps impossible.

TABLE 2—Urinary Excretion of Thiamine Following Administration of Thiamine by Enema  
(Micrograms in twelve hour specimen)

Subject	Before Thiamine Enema	After Two Thiamine Enemas
A	160	1,615
B	162	5,200

If this were the case, the presence of fecal thiamine would not explain the protection from the deficiency which these 4 subjects exhibited. In order to test this possibility, retention enemas containing 50 mg. of thiamine were given to 2 persons on successive days. Twelve hour collections of urine were made before this regimen was started (control period) and on the day the second enema was given. The results (shown in table 2) indicate a pronounced rise in urinary thiamine as the result of the thiamine enemas and provide ample proof that the large intestine can absorb thiamine.

It is not possible to state at the present time that thiamine requirements can be sustained for an indefinite length of time by such thiamine as is formed by intestinal bacteria. It may be that minute amounts of oral thiamine are needed for the growth of the bacteria which synthesize thiamine. The nature of the organisms which synthesize thiamine and the relation of diet to such bacterial synthesis are now under investigation.

The demonstration that intestinal bacteria can synthesize thiamine carries interesting implications for human nutrition. This phenomenon may explain the discrepancies in thiamine requirements found by differ-

ent observers. Since it is likely that the biosynthesis of thiamine is greatly affected by diet, as is known to be the case in animals, it follows that we must think in terms of requirements on particular diets rather than of requirements in general. It is quite possible that dietary factors other than the thiamine content may explain in part some of the paradoxes in the incidence of beriberi. The possibility of controlling thiamine deficiency by means other than thiamine administration remains to be explored. Finally, we may point out that the inhibition of the biosynthesis of thiamine by a sulfonamide drug has an important clinical implication for the physician who uses these drugs.

## THE CIRCULATION IN THE SKIN IN THE SHOCK SYNDROME

### COMPARISON OF SIMPLE PROGNOSTIC FEATURES OF CLINICAL VALUE

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"Early diagnosis and early adequate treatment" is a maxim which applies with particular emphasis to the shock syndrome. If impending shock could be suspected and treated effectively before changes in blood pressure and pulse sound the clarion call of approaching death, lives could be saved. Indeed it is even maintained by some observers that when the blood pressure falls and is maintained for an appreciable time below the so-called "critical level" and pulse changes are pronounced, a stage of shock has been attained which is frequently irreversible.<sup>1</sup> Hence the need for simple clinical methods which provide a means of diagnosing impending shock at the earliest possible moment. To accomplish this many attempts have been made, to date not one remains so effective as a serial follow-up of blood pressure and pulse. Among the promising are studies of blood concentration. Unquestionably they are of value in the shock arising from burns. They are not so satisfactory when applied to other types of the shock syndrome.<sup>2</sup>

My purpose in this investigation was comprehensive. It was to establish a physiologic and clinical basis for evaluation of certain features of shock states and to show that a few simple tests of the circulation in the skin are of diagnostic and prognostic importance in various types of the shock syndrome which are commonly encountered. The use of two recently developed methods of studying quantitatively the responses of the smaller blood vessels of the skin have made this possible.<sup>3</sup> The first method measures two aspects of the hyperemic response (vasodilatation) consequent to a standardized period of local ischemia. First is the minimum time required to elicit a given degree of reactive hyperemia. The second is to measure the clearing time for this

Mrs. Blanche V. Richard rendered valuable technical assistance. This investigation has been aided by a grant from the Josiah Macy Jr. Foundation. From the Department of Medicine, Long Island College of Medicine, Kings County Hospital Division. Dr. Walter B. Cannon and Dr. S. R. M. Reynolds read and criticized the manuscript of this paper, for which the author is grateful. 1. Cannon, W. B., and Cottell, McK. Studies in Experimental Traumatic Shock. V. The Critical Level in a Falling Blood Pressure Arch. Surg. 4: 300 (March) 1922. 2. Scudder, I., and Finner, J. Physiological and Clinical Basis for Treatment of Shock, Clinics 1: 43 (June) 1942. 3. Scudder, I. Shock, Blood Studies as a Guide to Therapy. Philadelphia, J. B. Lippincott Company, 1940. Weiss, Soma. Syncope, Collapse and Shock, Proc. Inst. Med. Chicago 13: 2 (Jan.) 1940. Harkins, C. 3. DiPalma, Reynolds and Foster (footnotes 9 and 11).

response. This it has been shown is an indication of the rate of blood flow in the skin. The second method measures the sensitivity of the small dermal vessels to give the so-called white reaction to graded mechanical stimulation (vasoconstriction).

#### PHYSIOLOGIC CONSIDERATIONS

Except for Grant, who has stressed the importance of clinical observation of the skin in shock, most observers dismiss the skin with the brief comment that it is pale, sometimes ashen in color, cold and sweaty.<sup>4</sup> Little of a factual nature is therefore known.

Perhaps the best way to approach the problem is to state the commonly accepted view of the pathogenesis of the circulatory failure in the initial stage of the shock syndrome.<sup>5</sup> This may be regarded as three definite but merging phases:

1. Reduction in effective circulating blood volume resulting in diminished cardiac output and diminished venous return. (The cause and mechanism do not concern us here but naturally may include trauma, hemorrhage, massive infection, burns, intestinal perforation or cardiac shock.)

2. Blood pressure maintained by vasocompensatory mechanisms. Pulse may or may not be altered.

3. Result is slowing of the peripheral blood flow. This is demonstrated in the skin by coldness of the extremities, cyanosis of the nail beds and sometimes actual stagnation of the blood in the small blood vessels.

It follows therefore, that closer observation of the circulation of the skin by the use of certain objective tests of the skin circulation, to be described later, will yield important clues of impending shock before it is heralded by a fall in blood pressure or changes in pulse rate. While slowing of the peripheral blood can exist without the patient being in shock (as for example in cardiac failure, myxedema, peripheral vascular disease or in debility) it must be emphasized that the shock syndrome cannot exist in the presence of an adequate peripheral circulation. This truism has been given the attention it deserves in Harkins's recent review.<sup>6</sup> In summarizing the results of numerous investigators who universally found slowing of the peripheral circulation in the early stages of the shock syndrome, he says "All these writers obtained confirmatory results and it seems to be without question that a decrease in blood flow is one of the prime factors in shock. So important and progressive is it that one might almost say that to diagnose shock a lancet to cut the ear or finger and determine the blood flow would prove almost as useful as all the sphygmomanometers ever made. If one were to select a single determination to follow the course of shock, an observation of the peripheral blood flow might be the best to choose."

To test the foregoing hypothesis the following observations were made:

#### METHODS AND PROCEDURES

No attempt was made to study just one type of shock. Rather all patients in whom the faintest possibility of shock existed were seen as early as possible after they were admitted. The following standard procedure was

followed with each patient. First, a careful but brief clinical history was secured to establish an etiologic factor. In the physical examination which followed and usually done at the same time as the history, particular attention was directed to the following details. The patient was stripped and remained exposed to the room air. At this point the importance of examining the patient as a whole cannot be too strongly stressed. The skin was examined with the aid of a light of a 60 watt daylight Mazda electric bulb.

**Blanching Test**—First a rough estimate of the amount of blood present in the skin areas in the trunk, extremities and face was made. This was done by simply pressing the forefinger forcibly into the skin and observing the blanched area for color contrast with the surrounding skin. Naturally, it follows that if the skin can be blanched at all by pressure some blood must be present in it, and the greater the color contrast with the unblanched skin the greater must be the amount of blood originally present. The rate of fill-in of the blanched areas also permits a rough, though very unreliable, estimate of blood flow.

**Temperature of the Skin**—Since the rate of blood flow determines the temperature of the skin, perceptible cooling of the skin, especially of the extremities, is an important indication of slowing the peripheral blood flow. It is not advisable to use instruments to do this because they are cumbersome, are not always available and the exact skin temperature actually means nothing in itself. What is important is to determine if there are any gross differences between the temperature of the skin of the trunk and the skin of the extremities. This can best be done by gentle palpation with the back of the digits of the hand. It is surprising what fine temperature gradation can be detected in this manner. Again it must be stressed that to do this properly the patient must be naked and exposed to room air for at least ten minutes and preferably for a longer period of time. To attempt to palpate skin temperature while the patient is covered by a blanket is ridiculous, and an extremity which has been in close proximity to a warm body will be warm because of direct transference of heat.

In this study, therefore, careful attention was directed to notation of unusual cooling of the skin of the hands and feet as compared to the temperature of the skin of the trunk.

**Color of the Skin**—The color of the skin admirably reflects changes in the rate of peripheral blood flow. The best places to observe are the nail beds of the hands and feet, the lips and the cheeks. The observer by himself can become competent in visual judgment of the changes in skin color which are dependent on the amount and state of oxygenation of the hemoglobin present in the blood vessels of the skin in the following manner. Apply a blood pressure cuff to a suitable normal arm held at heart level and rapidly inflate the cuff to a pressure above the systolic level of the subject. Note carefully the skin color changes which attend the complete circulatory stasis. In about one minute the skin of the arm and forearm will become slightly paler and ashen in color, the nail beds very cyanotic. This limb now represents the changes in skin color which are encountered in the average case of shock in which there has been no blood loss. The arterial color which replaces the cyanosis on release of the pressure in the cuff serves to emphasize the type of skin color with excellent circulation. Now if the experiment is

<sup>4</sup> Grant R. T. Memorandum on the Observations Required in Cases of Wound Shock. *Brit. M. J.* 2: 332 (Sept. 6) 1941.

<sup>5</sup> Wiggers, C. J. Present Status of the Shock Problem. *Physiol. Rev.* 22: 74 (Jan.) 1942. Harkins.<sup>6</sup>

<sup>6</sup> Harkins, H. Recent Advances in the Study and Management of Traumatic Shock. *Surgery* 9: 231 (Feb.) 44 (March) 60 (April) 1941.

Patients in this study included those in both the open and closed divisions of medicine and surgery at Kings County Hospital. The members of the staff, both doctors and nurses, gave an untiring co-operation.

repeated, this time the limb held high and the blood drained out of it before inflation of the cuff, the type of skin color changes encountered most commonly in hemorrhagic shock may be observed. In this case extreme pallor of the skin will be noted. Cyanosis can be detected only in the nail beds. Finally, if the experiment is repeated once more with the limb held dependent and blood allowed to collect in it, the skin color changes most frequent in medical types of shock such as that due to massive infection and shock of cardiac origin may be studied. In this case, the limb is plethoric and the color changes are more striking than in the foregoing instances. The bright red arterial blood color first changes to a duller shade of red, perhaps best described as brick red, then purplish and finally deeply cyanotic. Thus it should be realized that a brick red skin color of the palm may denote considerable slowing of peripheral blood flow in a patient with a reason for going into shock. If deep cyanosis is waited for, many cases of impending shock may be missed.

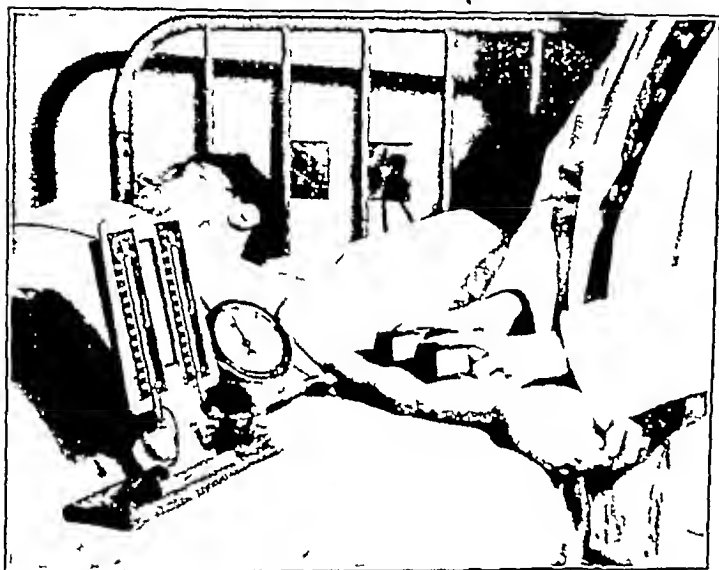


Fig 1—The ease with which the reactive hyperemia ring test is done clinically is illustrated. A weighted rubber ring is applied to the skin of the forearm for a period of seconds measured by the stopwatch. By trial and error on different areas a threshold hyperemic response is determined. Note that no additional pressure is put on the weight. The forefinger merely balances it. The length of time required for the threshold response to fade is known as the clearing time and is related to rate of blood flow in the skin. In this instance two weights are used simultaneously to speed up the determination.

**The Tache Response**—One other clinical method of detecting slowing of blood flow in the skin has been found occasionally useful. This consists in stroking the skin rather forcibly with a blunt instrument such as the end of a ruler or the cap of a fountain pen. This response, best described by Lewis, in a normal skin consists in the appearance in a few seconds of a red line along the exact path of the stroking instrument. Surrounding the red line is an area of pallor and beyond this an arteriolar flare.<sup>8</sup> Our procedure for the shock patient was to stroke simultaneously the skin of the chest in the area just above the breast and the skin of the forearm. Three things were watched for: (1) the length of time required for the red line to appear, (2) whether or not there was a delay in the appearance of the red reaction on the forearm as compared to the chest and (3) the color of the blood which composed the red line. No attention was paid to the presence or

absence of the surrounding pallor and flare, as this was found to be extremely variable.

The following conditions denote slowing of the peripheral blood flow: delay in the appearance of the red line beyond five seconds, and especially delay in the appearance of the red line on the forearm as compared to that on the chest. The color of the red line should be bright red. Altered shades of red, varying from brick red to a purplish red and even a deep cyanotic color, denote respectively a more severe degree of slowing of peripheral blood flow.

These four simple clinical tests of the circulation in the skin, while they are of inestimable value in the proper detection and judgment of the severity of the shock syndrome, still leave much to be desired. They are purely of a qualitative and subjective nature and require much experience to be interpreted properly. Moreover, they do not take into account environmental and seasonal factors, which are known to affect profoundly the circulation of the skin.<sup>9</sup> The test to be described obviates these difficulties.

**Reactive Hyperemia Ring Test**—It has been found that the disappearance or clearing time of a standardized reactive hyperemia response produced by local ischemia of the skin is related to the rate of blood flow. Proof of this fact and, in addition, a description of the method, physiologic, seasonal, and aging variables, and its application to the clinical evaluation of peripheral vascular disease have been dealt with before in detail.<sup>10</sup> As regards the method of its determination, suffice it to say here that it depends on the application of a weighted rubber ring (weight loading 100 Gm per square centimeter) to the skin of the flexor surface of the forearm. A stopwatch or a suitable clock is required to time the period of ischemia (application of the weight) and clearing time of the response after removal of the weight. Figure 1 shows the ease with which the test is done clinically. The minimal length of time, expressed in seconds, required to elicit hyperemic rings of uniform coloration, uniform width and with discrete edges is noted as the stimulus time or threshold for a response. The length of time required for the hyperemic rings to fade completely is noted as the clearing time. To establish a base line of seasonal and environmental factors a control reactive hyperemia ring test was done on the observer himself or a suitable normal patient in the same room as the shock patient.

**Capillary Sensitivity**—In this investigation one other test was done which, although not clinically applicable because of the complexity of the apparatus and the time involved, supplied important information concerning the reactivity of the smallest blood vessels of the skin. A strength-duration or excitation curve was determined by using a mechanical device capable of varying both the speed and the intensity of application of a stroker along the skin. This was done by finding the least weight in grams at each of five critical speeds of the stroker which produced a limited degree of vasodilatation against a background of vasoconstriction. The curve thus obtained was quantitated by means of the

<sup>9</sup> DiPalma, J. R., Reynolds, S. R. M., and Foster, F. I. Quantitative Measurement of Reactive Hyperemia in Human Skin, *Am Heart J* 23: 377 (March) 1942.

<sup>10</sup> DiPalma, J. R., and Foster, F. I. The Segmental and Aging Variations of Reactive Hyperemia in Human Skin, *Am Heart J* 24: 332 (Sept.) 1942. DiPalma, J. R., Muss, I., and Foster, F. I. A Reactive Hyperemia Ring Test in the Study, Evaluation and Prognosis of Pedal Lesions Caused by Arteriosclerosis Obliterans and Arterial Embolism, *ibid* 24: 345 (Sept.) 1942. DiPalma, Reynolds and Foster.

<sup>8</sup> Lewis, Thomas. *The Blood Vessels of the Human Skin and Their Responses*, London, Shaw & Sons, Ltd. 1927.

formula recommended by Lassalle, where excitability, or  $E$ , is equal to  $\frac{1}{\text{Rheobase}^2 \times \text{Chronaxie}}$ . The reciprocal is used so that a low coefficient signifies low excitability, a high coefficient a high degree of excitability. Figure 2 illustrates three curves and the coefficient derived from each curve in a patient in shock from massive infection. A full discussion of this method is given elsewhere.<sup>11</sup> The significance of this test is this. Since normal data have already been secured for this response comparison can be made with the results obtained in the shock syndrome. Moreover, correlation can be made in the various types of the shock syndrome and in different stages with the degree of clinically observed and objectively studied alterations in rate of peripheral blood flow. This will be brought out in more detail later.

### RESULTS

Forty-nine cases of surgical and medical shock of various degrees of severity have been closely followed. Eleven additional cases of suspected shock which later proved to have different disease syndromes were also studied. In the interest of brevity, 25 of these cases have been selected as a representative sample and summarized in detail in the accompanying table.

**Clinical Evaluation**—Review of the results in the table clearly demonstrates the value of the clinical examination of the skin in the shock syndrome. Particularly valuable is the estimation of the amount of blood present in the skin by means of the blanching test. It will be noted that the cases of hemorrhagic shock are the only ones which show definite diminution of blood in the skin. The cases of traumatic shock also often show some diminution of blood in the skin but in our experience never as much as the hemorrhagic ones. It should be pointed out here that mere notation that the skin is pale is not enough. Often it will be found that a patient who looks pale particularly under some lighting conditions actually has considerable blood in his skin when a critical attempt is made to determine this by means of the blanching test. The cases of medical shock such as massive infection and those of cardiac origin invariably show greatly increased amounts of blood in the skin, while those cases observed with ruptured peptic ulcer show diminution for only transitory periods and soon revert to normal filling of the skin even without treatment. Thus mere observation of the amount of blood in the skin gives an important clue as to the cause of the shock syndrome in puzzling cases. In this regard, particularly striking is the case of B S. Attention to the amount of blood in the skin would have led early to the correct diagnosis, and the life of the patient might have been saved. The clinician should have asked himself the question "Why is it that this patient, who gives a story of blood loss and should have the appearance of hemorrhagic shock, actually has such a great amount of blood present in the skin?" Search at this time for a medical cause for the shock syndrome might have led to the finding of suggestive tenderness and spasticity of the lower abdomen.

As regards skin temperature and skin color, little need be said. The results are clearly summarized in the table. Suffice it to reiterate here that the mere finding of cold hands and cyanotic nail beds does not indicate at all that the shock syndrome is present. On

the other hand, they are very suggestive findings when they fit in with the history and other physical findings. Moreover, the insidious onset of coldness and altered skin color in a patient who was previously normal in this regard often presages the onset of the shock syndrome before evident blood pressure changes occur.

The tache response should be done in all cases. It is simple to do and gives information of slowing of blood flow in skin areas (forearm and chest) in which cooling and color changes are not so easy to pick up clinically. The table demonstrates the range of change which can be expected in shock cases.

**Reactive Hyperemia Ring Test**—This simple test proved more valuable than all others. It permitted objective determination of alterations in blood flow in the small blood vessels of the skin of the forearm. Reference to the table will bring out first the absence of variation of the readings in the cases of suspected shock from the normal controls. Of particular interest is the case of E H, who had a systolic blood pressure of about 70 mm of mercury for eight hours, yet by clinical signs and the reactive hyperemia ring test her peripheral blood flow was normal. The fact that she eventually attained normal blood pressure with just 1,000 cc. of 5 per cent dextrose in isotonic solution of sodium chloride as therapy substantiated the impression that she was never actually in the shock syndrome.

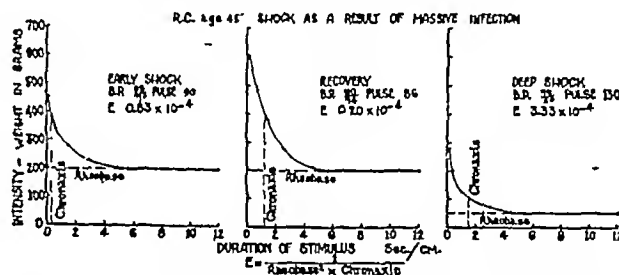


Fig 2—Three strength-duration curves on the same patient in shock from massive infection. An instrument capable of critically varying both the duration and the intensity of a stroke along the skin is used to determine these curves. They are quantified mathematically by use of the formula and graphic location of the rheobase and chronaxie as illustrated. The result is expressed as a coefficient reduced to the fourth power to give a simple digit as an idea of the excitability. A coefficient  $E$  or excitability above  $0.5 \times 10^{-4}$  indicates an increase in the sensitivity of the small dermal vessels and vice versa.

Three other cases of suspected shock are included in the table because they are particularly illustrative of the type of patient which offers trouble in the determination of the presence or absence of the shock syndrome. The first type is the patient who succumbs to a moderate or minimal amount of trauma. Blood pressure may or may not be lowered when the patient is first seen. Serial follow-up of skin circulatory changes should be done as well as frequent blood pressures and pulses. A change in the skin circulation may indicate the need for more intensive treatment before blood pressure or pulse changes occur. Conversely, a good skin circulation as in case S A<sup>2</sup> is a reassuring sign. The second type is a patient who is brought to the hospital with a history of falling suddenly on the street or down a flight of stairs and who incurs some degree of trauma. It is desired to know if the patient has had a cerebral vascular accident which preceded the fall or if the trauma incurred as a result of an accidental fall accounts for the superficial appearance of the shock syndrome. Case L S demonstrates the value of observation of skin circulatory changes under these conditions. The third type frequently seen in medical practice is the patient

11 DiPalma J R, Reynolds S R M, and Foster F I. Measurement of the Sensitivity of the Smallest Blood Vessels in Human Skin Responses to Graded Mechanical Stimulation in Normal Men. *J Clin Investigation* 20: 333 (July) 1941.

repeated, this time the limb held high and the blood drained out of it before inflation of the cuff, the type of skin color changes encountered most commonly in hemorrhagic shock may be observed. In this case extreme pallor of the skin will be noted. Cyanosis can be detected only in the nail beds. Finally, if the experiment is repeated once more with the limb held dependent and blood allowed to collect in it, the skin color changes most frequent in medical types of shock such as that due to massive infection and shock of cardiac origin may be studied. In this case, the limb is plethoric and the color changes are more striking than in the foregoing instances. The bright red arterial blood color first changes to a duller shade of red, perhaps best described as brick red, then purplish and finally deeply cyanotic. Thus it should be realized that a brick red skin color of the palm may denote considerable slowing of peripheral blood flow in a patient with a reason for going into shock. If deep cyanosis is waited for, many cases of impending shock may be missed.



Fig. 1—The ease with which the reactive hyperemia ring test is done clinically is illustrated. A weighted rubber ring is applied to the skin of the forearm for a period of seconds measured by the stopclock. By trial and error on different areas a threshold hyperemic response is determined. Note that no additional pressure is put on the weight. The forefinger merely balances it. The length of time required for the threshold response to fade is known as the clearing time and is related to rate of blood flow in the skin. In this instance two weights are used simultaneously to speed up the determination.

**The Tache Response**—One other clinical method of detecting slowing of blood flow in the skin has been found occasionally useful. This consists in stroking the skin rather forcibly with a blunt instrument such as the end of a ruler or the cap of a fountain pen. This response, best described by Lewis, in a normal skin consists in the appearance in a few seconds of a red line along the exact path of the stroking instrument. Surrounding the red line is an area of pallor and beyond this an arteriolar flare.<sup>8</sup> Our procedure for the shock patient was to stroke simultaneously the skin of the chest in the area just above the breast and the skin of the forearm. Three things were watched for: (1) the length of time required for the red line to appear, (2) whether or not there was a delay in the appearance of the red reaction on the forearm as compared to the chest and (3) the color of the blood which composed the red line. No attention was paid to the presence or

absence of the surrounding pallor and flare, as this was found to be extremely variable.

The following conditions denote slowing of the peripheral blood flow: delay in the appearance of the red line beyond five seconds, and especially delay in the appearance of the red line on the forearm as compared to that on the chest. The color of the red line should be bright red. Altered shades of red, varying from brick red to a purplish red and even a deep cyanotic color, denote respectively a more severe degree of slowing of peripheral blood flow.

These four simple clinical tests of the circulation in the skin, while they are of inestimable value in the proper detection and judgment of the severity of the shock syndrome, still leave much to be desired. They are purely of a qualitative and subjective nature and require much experience to be interpreted properly. Moreover, they do not take into account environmental and seasonal factors, which are known to affect profoundly the circulation of the skin.<sup>9</sup> The test to be described obviates these difficulties.

**Reactive Hyperemia Ring Test**—It has been found that the disappearance or clearing time of a standardized reactive hyperemia response produced by local ischemia of the skin is related to the rate of blood flow. Proof of this fact and, in addition, a description of the method, physiologic, seasonal, and aging variables, and its application to the clinical evaluation of peripheral vascular disease have been dealt with before in detail.<sup>10</sup> As regards the method of its determination, suffice it to say here that it depends on the application of a weighted rubber ring (weight loading 100 Gm per square centimeter) to the skin of the flexor surface of the forearm. A stopwatch or a suitable clock is required to time the period of ischemia (application of the weight) and clearing time of the response after removal of the weight. Figure 1 shows the ease with which the test is done clinically. The minimal length of time, expressed in seconds, required to elicit hyperemic rings of uniform coloration, uniform width and with discrete edges is noted as the stimulus time or threshold for a response. The length of time required for the hyperemic rings to fade completely is noted as the clearing time. To establish a base line of seasonal and environmental factors a control reactive hyperemia ring test was done on the observer himself or a suitable normal patient in the same room as the shock patient.

**Capillary Sensitivity**—In this investigation one other test was done which, although not clinically applicable because of the complexity of the apparatus and the time involved, supplied important information concerning the reactivity of the smallest blood vessels of the skin. A strength-duration or excitation curve was determined by using a mechanical device capable of varying both the speed and the intensity of application of a stroker along the skin. This was done by finding the least weight in grams at each of five critical speeds of the stroker which produced a limited degree of vasodilatation against a background of vasoconstriction. The curve thus obtained was quantitated by means of the

<sup>9</sup> DiPalma, J. R., Reynolds, S. R. M., and Foster, F. I. Quantitative Measurement of Reactive Hyperemia in Human Skin. *Am. Heart J.* 23: 377 (March) 1942.

<sup>8</sup> Lewis, Thomas. *The Blood Vessels of the Human Skin and Their Responses*, London, Shaw & Sons Ltd. 1927.

<sup>10</sup> DiPalma, J. R., and Foster, F. I. The Segmental and Aging Variations of Reactive Hyperemia in Human Skin. *Am. Heart J.* 24: 332 (Sept.) 1942. DiPalma, J. R., Muss, I., and Foster, F. I. A Reactive Hyperemia Ring Test in the Study, Evaluation and Prognosis of Pedal Lesions Caused by Arteriosclerosis Obliterans and Arterial Embolism, *ibid.* 24: 345 (Sept.) 1942. DiPalma, Reynolds and Foster.<sup>9</sup>



Twenty-Five Cases

Objective Tests of Skin Circulatory Changes									
Reactive H <sub>2</sub> Permea Ring Test *			Capillary Sensitivity Coefficient $\times 10^{-4}$			Shock Therapy	Final Outcome	Comment	
On admission	T H	C T	On Admission	Deep Shock	Recovery				
On admission	20	25	0.41		0.21	1,000 cc. of dextrose and saline solution intravenously	Recovery	History of a fainting spell, recent marriage, bloody vaginal discharge and very low blood pressure which entitled admitting physician to make a diagnosis of abortion with hemorrhage development of definite neurologic signs 24 hours later brought out the true diagnosis	
Recovery	70	27							
Normal control	70	20							
On admission	20	25				1,000 cc. of dextrose and saline solution intravenously	Recovery	Because patient was very restless sweating and asked continuously for water she was thought to be in impending shock	
Recovery	70	25							
Normal control	70	30							
On admission	15	50				Infusion started	Died in 8 hours	Picked up on street automobile accident (?) initial blood pressure could not be obtained because of obesity of patient later on stertorous breathing and peripheral neurologic signs indicated hemiplegia which was immediate cause of death	
Deep shock	25	50					cardiorespiratory death		
Normal control	30	75							
On admission	30	40				Morphine	Recovery	Low blood pressure and precordial pain indicated a coronary occlusion excellent peripheral blood flow was against this diagnosis compare with cases of cardiac shock below	
Deep shock	35	45							
Recovery	25	30							
Normal control	25	75							
On admission	20	600	4.50	14.0	0.41	500 cc. plasma 1,000 cc. blood 3,000 cc. dextrose and saline solution	Recovery (See graph)	Moderately severe traumatic shock seen early good response to therapy	
Deep shock	10	230							
Recovery	70	60							
Normal control	15	22							
On admission	170	600				500 cc. plasma 1,000 cc. blood 2,000 cc. dextrose and saline solution	Recovery (See graph)	Some degree of shock due to hemorrhage (a possible amount of blood loss could not be estimated)	
Deep shock	120	240							
Recovery	90	170							
Normal control	60	70							
On admission	160	600	0.63	5.30	0.51	1,000 cc. blood 3,000 cc. dextrose and saline solution	Died in 24 hours	Probably lost at least 500 cc. of blood blood pressure did not fall until the very end but reactive hyperemia ring test revealed extreme slowing of peripheral blood flow note that capillary sensitivity coefficient rose to 5.30 just before death	
Deep shock	120	420							
Recovery	120	760							
Normal control	15	15							
On admission	60	210	0.18	0.20	0.13	1,000 cc. blood 4,000 cc. dextrose and saline solution	Died in 18 hours	Clinical picture indicated that immediate cause of death was head trauma note that clinical picture and tests denote the shock syndrome despite elevated blood pressure patient was known to be hypertensive	
Deep shock	105	600							
Recovery	55	200							
Normal control	70	50							
On admission	75	90	0.18	0.42	0.37	500 cc. blood 2,000 cc. dextrose and saline solution	Recovery	A mild case of traumatic shock with excellent response to therapy	
Deep shock	75	125							
Recovery	60	75							
Normal control	25	30							
On admission	105	151	0.46	0.80	0.20	1,000 cc. blood 500 cc. plasma 3,000 cc. dextrose and saline solution	Recovery	Blood pressure could not be taken because of extensive trauma to extremities It was finally taken on the uninjured leg skin changes indicated early shock and the need for intensive therapy which was life saving	
Deep shock	90	210							
Recovery	60	115							
Normal control	92	97							
No response to local ische- mia even after five minutes of application of the weighted ring						300 cc. blood	Died in 30 minutes	Picked up on the street probably many hours after an automobile accident included to show terminal changes in the skin as a result of prolonged severe shock possibly some element of exposure to cold also present	
On admission	160	165	0.61	9.40	0.27	2,500 cc. blood 500 cc. plasma 4,000 cc. dextrose and saline solution	Died (See graph)	Despite adequate therapy bleeding from ulcer could not be stopped by conservative measures	
Deep shock	240	420							
Recovery	120	155							
Normal control	30	35							
On admission	120	150	0.14	0.32	0.14	1,000 cc. blood 3,000 cc. saline solution	Died	Initial blood loss of at least 1,000 cc. patient had been bleeding for two weeks prior to admission probably inadequately treated	
Deep shock	160	420							
Recovery	90	120							
Normal control	60	80							
On admission	190	1,060	0.09	1.00	0.38	1,000 cc. blood 1,000 cc. dextrose and saline solution	Recovery	Clinically a mild case of hemorrhagic shock patient evidently responded to his blood loss by hypertension instead of hypotension however despite this initial hypertension he had pronounced slowing of peripheral blood flow	
Deep shock	90	600							
Recovery	45	70							
Normal control	70	70							
On admission	80	94	0.12	0.23	0.77	1,000 cc. blood 1,000 cc. dextrose and saline solution	Recovery	Mild case of hemorrhagic shock note that peripheral blood flow was excellent despite low blood pressure and pallor of patient	
Deep shock	50	51							
Recovery	45	51							
Normal control	35	35							
On admission	40	45	1.60	0.17	0.43	500 cc. blood 2,000 cc. dextrose and saline solution	Recovery	Mild case of shock operated on immediately with excellent results	
Deep shock	40	60							
Recovery	5	150							
Normal control	5	27							
On admission	140	2,400	1.00	0.10	0.10	500 cc. blood 500 cc. plasma	Died in 12 hours	Neglected case in terminal shock note definite evidence of slowing of peripheral blood flow and the poor response to therapy	
Deep shock	90	600							
Normal control	40	50							

Type of Shock	Patient, Age, Sex	Original Diagnosis	Final Diagnosis	Blood Pressure and Pulse			Clinically Detectable Skin Circulatory Changes on Admission			
					B P	P	Blanching Test	Skin Temperature	Skin Color	Tache Response
Massive infection	R R 53 ♂	Ruptured peptic ulcer	Same	On admission Deep shock Recovery	78/60 96/70 120/78	130 100 80	Normal amount of blood in the skin	Moderate cooling of the hands and feet	Hands brick red	Moderate delay in appearance in arm as compared to the chest brick red
	B S 40 ♀	Spontaneous abortion with hemorrhage	Septic abortion gangrene of the uterus (autopsy)	On admission Deep shock Recovery	0/0 50/30 80/50	? 120 100	Supernormal amount of blood in the skin pooling of blood in the hands	Pronounced cooling of entire body	Purplish red skin color deep cyanosis of hands and lips	Pronounced delay in the arm as compared to chest, cyanotic
	J B 42 ♂	Lobar pneumonia	Same	On admission Deep shock Recovery	125/70 60/40 90/60	90 120 96	Supernormal amount of blood in the skin	Pronounced cooling of hands and feet	Cyanosis of lips hands and nail beds	Pronounced delay in arm as compared to the chest purplish red
	R O 45 ♂	Peritonitis, ruptured appendix	Same	On admission Deep shock Recovery	98/70 70/50 110/74	60 130 80	Supernormal amount of blood in the skin	Moderate cooling of hands and feet as compared to the trunk	Reddish purple color of nail beds and palms of hands	Pronounced delay in arm as compared to the chest purplish red
Cardiac shock	A S 33 ♀	Meningococemia	Same, positive blood cultures	On admission Deep shock	50/? 0/0	96 (Apex) 91 (Apex)	Extreme plethora of the entire skin	Pronounced cooling of entire body	Deep cyanosis of all skin areas many petechial	Impossible to elicit tache except on chest here it was decidedly delayed and deeply cyanotic
	M R 53 ♀	Coronary occlusion hypertensive cardiovascular disease	Same, T <sub>2</sub> type of electrocardiogram	On admission Deep shock	110/80 60/30	86 80	Pronounced plethora, especially of the hands and the face	Pronounced cooling of the extremities	Deep reddish purple cyanosis of the entire skin deep cyanosis of the hands	Pronounced delay in the tache response
	E A 67 ♀	Coronary occlusion (?), paroxysmal auricular tachycardia	Arteriosclerotic heart disease coronary sclerosis	On admission Deep shock Recovery	130/90 0/0 100/60	90 180 84	Pronounced plethora, especially of the face and upper chest	Pronounced cooling of the extremities	Deep reddish purple cyanosis of the face and hands	Pronounced delay in the tache response
	J V 40 ♀	Rheumatic heart disease severe mitral stenosis multiple embolization (?) pulmonary infarct (?) auricular fibrillation	Same plus hemiplegia as a result of an embolus	On admission Deep shock	90/60 80/60	62 60	Supernormal amount of blood in the skin pooling in the hands	Pronounced cooling of the extremities	Trunk is of good color but extremities are cyanotic	Moderate delay in the arm as compared to the chest brick red

\* TH = threshold C T = clearing time (in seconds)

usually known to have heart disease, who has sudden onset of precordial pain and the doctor notices that his blood pressure has fallen considerably. Here again, as in the case of A. M., attention to the circulation of the skin is most helpful in diagnosis and prognosis.

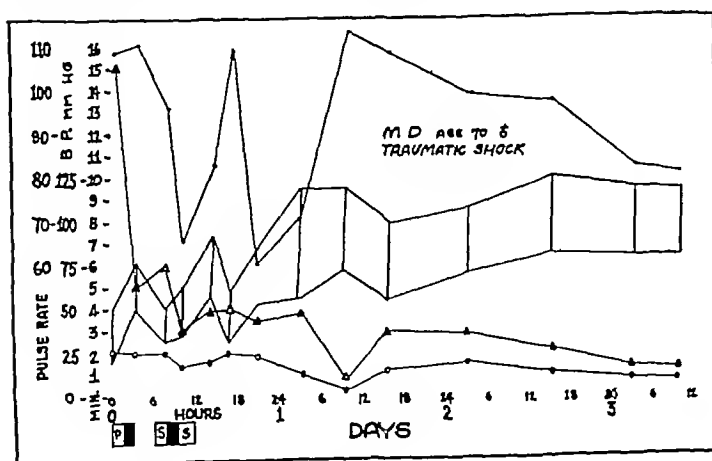


Fig. 3—A case of traumatic shock as a result of bilateral fractures of the legs. From above downward are pulse blood pressure (shaded area), clearing time (triangles) and threshold (heavy dots) of the reactive hyperemia ring test. Solid black box is whole blood, box with P is plasma and box with S is saline solution, all in 500 cc amounts. Note the immediate fall of the clearing time (improved skin circulation) indicating the improvement in peripheral blood flow. Note also that this precedes the relatively slow rise in blood pressure and the great variability of the pulse.

The changes found in the reactive hyperemia ring test in the shock syndrome which results from trauma are shown in the table. It will be noted that in all cases

except one the threshold of the response is raised. This is not surprising, since it has been previously demonstrated that two factors known to exist in shock, anoxemia and acidosis, both tend to elevate the threshold. Also of great interest is the observation that hypercapnia will neutralize the effect of acidosis and anoxemia, and it is well known that apnea is usually present in shock.<sup>12</sup> The changes in the clearing time of the response are even more striking. The rise in clearing time (i.e. decreased blood flow) ranges from three times to sixty times the control value dependent on the degree of slowing of peripheral blood, which obviously varies greatly in different degrees of shock and with seasonal and environmental conditions. From our experience we have set the arbitrary rule that a rise in clearing time of three times the normal control clearing time denotes a highly significant degree of slowing of skin circulation in the forearm.

The value of following the clinical course of a patient by means of the reactive hyperemia ring test is clearly demonstrated in the case of M. D. in the table and in figure 3. It will be noted that with therapy the blood pressure did not rise significantly. The pulse was extremely variable. The immediate and persistent fall in the clearing time, however, was a very hopeful sign. Thus, improvement in peripheral blood flow as indicated by the clearing time of the reactive hyperemia

12 DiPalma, J. R. Quantitative Alterations in the Hyperemic Responses to Local Ischemia of the Smallest Blood Vessels of the Human Skin Following Systemic Anoxemia, Hypercapnia, Acidosis and Alkalosis. *J. Exper. Med.* 76: 401 (Nov.) 1942.

## Free Cases—Continued

Objective Tests of Skin Circulatory Changes									
Reactive Hyperemia Ring Test *		Capillary Sensitivity Coefficient $\times 10^{-4}$			Shock Therapy	Final Outcome	Comment		
		On Admission	Deep Shock	Recovery					
On admission	TH 25 OT 105	0.64	3.13	0.51	1,000 cc blood 2,000 cc dextrose and saline solution	Recovery	Moderately severe shock relieved by adequate therapy and operation		
Deep shock	30 140	(postoperative)							
Recovery	40 60								
Normal control	45 50								
On admission	60 200	2.10	4.10		1,000 cc blood	Died in 12 hours	History of abortion with loss of blood led to a mistaken diagnosis. Later discovered that blood loss had been negligible. Absence of skin pallor should have been a dominant physical finding suggesting a more plausible diagnosis than hemorrhagic shock.		
Deep shock	100 420				3,000 cc dextrose and saline solution				
Recovery	60 180								
Normal control	20 75								
Deep shock	60 340				3,000 cc 10% dex- trose, caffeine, intravenous chemotherapy	Recovery	Patient was admitted as having ordinary pneumonia. fortuitous examination of the skin circulatory changes several hours later led to a diagnosis of shock confirmed by blood pressure change. prompt intensive therapy was life saving.		
Recovery	50 170								
Normal control	55 65								
On admission	60 200	0.83	3.33	0.20	1,500 cc blood	Died in 48 hours	The striking thing was the pooling of blood in the skin. open drainage was of no avail.		
Deep shock	90 450				1,000 cc plasma				
Recovery	80 140				8,000 cc dextrose and saline solution				
Normal control	35 35								
No response to local ische- mia even after five minutes of application of the weighted ring					500 cc blood	Died in 6 hours	Included to show pronounced changes in severe terminal shock. the amazing thing was the mental clearness of the patient until the very end.		
On admission	45 130	1.10	8.00		1,000 cc 10% dex- trose caffeine	Died in 64 hours	Went on to develop symmetrical peripheral gangrene of the extremities. remained mentally lucid until the very end.		
Deep shock	25 170								
Normal control	40 45								
Deep shock	20 600		2.20	0.28	Mecholyl	Recovered from the first attack died 3 days later	Illustrates forward failure of heart with shock syndrome as a result of tachycardia.		
Recovery	25 180								
Normal control	25 25								
On admission	60 600	9.40	10.00		500 cc blood	Died in 12 hours	Immediate cause of death was hemiplegia with bulbar failure. note very high capillary sensitivity coefficient.		
Deep shock	100 1,200				1,000 cc dextrose and saline solution				
Normal control	20 22								

ring test was the only objective finding on which a good prognosis could be based. Incidentally in this particular patient there was also clinical evidence of improvement in skin circulation by the tests that have been mentioned.

A low blood pressure maintained even for as long as eighteen hours as in this patient does not denote irreversible shock as long as the peripheral circulation remains adequate.

Case S A<sup>2</sup> in the table and in figure 4 illustrates another interesting point brought out by these studies. Peripheral blood flow as indicated by the clearing time of the reactive hyperemia ring test may remain relatively slow for a long period and even after the blood pressure has attained normal levels. This is interpreted as indicating that the patient is not yet out of danger despite an elevated blood pressure. Indeed, in this case (fig 4) improvement in peripheral blood occurred at a time, twenty-one hours after admission, when the blood pressure had diminished considerably.

In hemorrhagic shock the threshold is also elevated just as in traumatic shock. As a rule however, there is not as pronounced an elevation of the clearing time as in other types of shock. This may indicate that peripheral slowing of blood flow is not so dominant a feature in hemorrhagic shock, especially in the early stages of the shock syndrome.

Case D B in the table and in figure 5 again demonstrates the value of peripheral blood flow studies by means of the clearing time of the reactive hyperemia

ring test. This patient, suffering from a severe bleeding peptic ulcer, had an initial blood loss of approximately a quart of blood. When first seen his blood pressure was 84 systolic, 50 diastolic, and the pulse rate was 100. There was a moderate slowing of

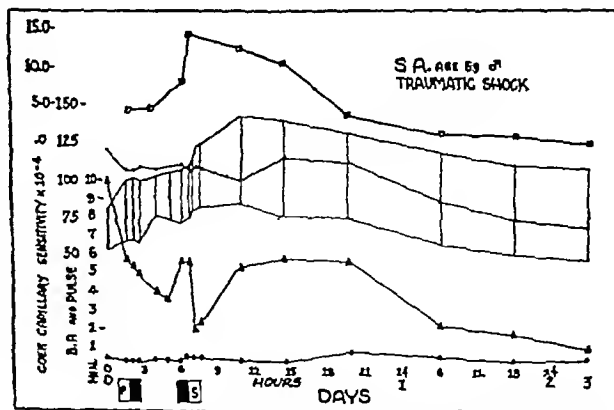


Fig. 4—A case of traumatic shock as a result of multiple leg fractures. Symbols same as in figure 3 except for addition of the capillary sensitivity coefficient (top line squares). For complete discussion see text.

peripheral blood flow. Immediate restoration of blood volume with plasma and whole blood brought about quick and satisfactory improvement. Conservative therapy kept him well for seven days. At this time he had another copious hemorrhage which precipitated



much more severe shock. There was now a profound decline of blood pressure (fig 5) and definite slowing of peripheral blood flow. With transfusion he again improved, his blood pressure attaining almost normal levels. His peripheral blood flow remained considerably slowed for forty-eight hours and then the clearing time began to creep slowly and perniciously upward despite the absence of change in the blood pressure. He died suddenly four days after his second large hemorrhage in spite of transfusions. Here again it must be mentioned that the clinically detectable changes in peripheral dermal blood flow correlated very well with the clearing time of the reactive hyperemia ring test. Thus in this case, as in the other, serial observations on the rate of peripheral blood proved to be a better prognostic sign than alterations in blood pressure or pulse. Lest it be misconstrued that serial studies of blood pressure are of no value in shock, let it be clearly emphasized here that this is not the case. The point which I wish to make is that both studies of blood pressure and peripheral blood flow must be done to evaluate properly the shock syndrome.

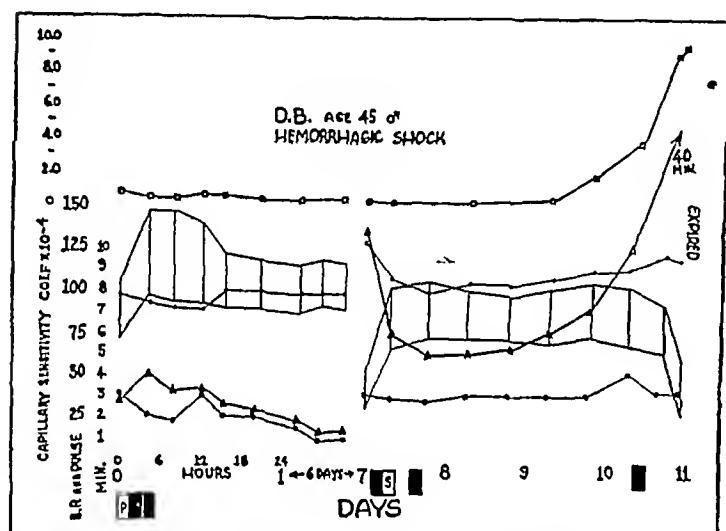


Fig 5—A case of hemorrhagic shock as a result of a bleeding peptic ulcer. Symbols same as in figures 3 and 4. For full discussion see text.

The results obtained with the reactive hyperemia ring test in medical shock are summarized in the table and need not be dealt with at length.

**Capillary Sensitivity**—In this study it was desired to demonstrate that state of shock is associated with an altered reactivity of the smallest blood vessels of the skin. Former investigations in which the capillary excitability coefficient was determined on over 100 normal persons permits the statement that as a general rule the coefficient is practically never elevated above  $0.5 \times 10^{-4}$ .<sup>13</sup> A rise in the coefficient as determined in this study indicates an increase in small dermal blood vessel reactivity. A fall signifies the opposite. The only diseases reported thus far in which the coefficient has been found to be definitely elevated are certain diseases of the central nervous system. Anoxemia, hypercapnia, local heat, stasis and certain steroids injected subcutaneously are also known to alter the coefficient of capillary sensitivity.<sup>14</sup>

When the results of the capillary sensitivity test are averaged for all types of shock presented, it is found that on admission the mean coefficient was  $1.56 \times 10^{-4}$ , during deep shock  $4.66 \times 10^{-4}$  and following recovery  $0.31 \times 10^{-4}$ . Thus it can be seen that even in this small series significant and striking changes in small dermal vessel reactivity are evident. Patient S A<sup>2</sup> in the table and figure 4, with moderately severe traumatic shock, demonstrates these changes well. One hour after admission his coefficient was  $4.90 \times 10^{-4}$ . Despite therapy, a slight rise in blood pressure and considerable improvement in peripheral blood flow his coefficient rose to  $14.00 \times 10^{-4}$  in a period of six hours, demonstrating an extreme degree of increase in sensitivity of the small dermal blood vessels to mechanical stimulation. At this point the coefficient began to fall and in twenty-four hours had attained normal levels. This correlated with the clinical improvement, sustained blood pressure and more rapid peripheral blood flow.

In hemorrhagic shock there has not been observed such a large increase in small vessel sensitivity on admission. No significance is attached to this, as the average case of hemorrhagic shock when first seen is not very severe. However, should it become grave the small dermal vessel sensitivity increases, as demonstrated in the table. Patient D B (fig 5) illustrates the ominous rise in small vessel sensitivity before death. It is worthy of note that the rise in the capillary excitability coefficient began forty-eight hours before the final failure of blood pressure and correlated in this case with the pernicious slowing of peripheral blood flow as shown by the lengthening clearing time of the reactive hyperemia ring test. The table illustrates the increase in small vessel sensitivity in deep shock as a result of other causes.

Thus it is evident that the state of shock is associated with an increased responsiveness of the small dermal blood vessels to mechanical stimulation as well as slowing of dermal blood flow. The question of whether or not this increase in small vessel sensitivity precedes slowing of dermal flow and actually is a causative factor (or vice versa) is an important one but unfortunately cannot be answered from the present data. The important point to establish at this time is that slowing of blood flow is not the sole factor in shock, changes in the small blood vessels also play an important role.

#### COMMENT

It is probably true that many expert clinicians have consciously or unconsciously learned to diagnose and evaluate the shock syndrome by accurate observation of the changes in temperature and color brought about by alterations in blood flow in the skin. However, it is not common knowledge and in general too little stress is laid on it. At the danger of tedious repetition it must be again pointed out that the shock syndrome cannot exist without slowing of peripheral blood flow; that the amount of filling of the skin with blood is important in the diagnosis of the type of shock, that only constant practice can make the physician expert in the clinical detection of slowing of blood flow in the skin and that a clinically useful and simple reactive hyperemia ring test is available for objectively determining changes in the rate of dermal blood flow. Moreover, alterations in dermal blood flow are often more diagnostic and prognostic than blood pressure and pulse changes.

<sup>13</sup> DiPalma, J. R., and Foster, F. I. Sensitivity of the Smallest Cutaneous Blood Vessels. Quantitative Responses to Graded Mechanical Stimulation and to Local Ischemia in Arterial Hypertension, Arteriosclerosis and Certain Allied Disorders. *J. Clin. Investigation* 21: 675 (Nov.) 1942. DiPalma, Reynolds and Foster.<sup>11</sup>  
<sup>14</sup> Reynolds, S. R. M., Hamilton, J. R., DiPalma, J. R., Hubert, G. B., and Foster, F. I. Dermovascular Change. Dermovascular Actions of Certain Steroid Hormones in Castrate, Eunuchoid and Normal Men. *J. Clin. Endocrinol.* 2: 228 (April) 1942. DiPalma, Reynolds and Foster.<sup>11</sup>

Finally, it must be recognized that slowing of blood flow in the skin while a very important and clinically useful method of diagnosing and following shock, is not the sole factor present. Alterations in the responses of the small blood vessels are just as much a part of the picture. Unfortunately the latter cannot as yet be readily detected clinically and the exact relationship to slowing of the blood flow remains for future investigation.

## Clinical Notes, Suggestions and New Instruments

### POSTURE DURING EXAMINATION OF RAPID HEART

L. S. LUTON, M.D., St. Louis

During the summer of 1942 while examining a man with a rapid heart, I asked him to lean forward the better to appreciate the auscultatory findings. He responded by bending to a 90 degree angle, when the rate abruptly slowed, apparently because of vagus influence. This was to me something new and was confirmed and since then has been verified in many tachycardias. This slowing occurred in most cases but not all and amounted to about one third of the previous rapid rate and required a full 90 degree angle for in some cases a bending to something less did not produce slowing. The most pronounced effect came in the first ten to twenty seconds when a gradual quickening ensued.

Many clinicians have wished to examine a rapid heart when slower and have relied on recumbence to secure this end. A forced expiration after a deep inspiration to slow the heart temporarily is recommended by the American Heart Association or recumbence and waiting for the nervousness to subside. There are murmurs due to a rapid heart action which disappear of course when slowed as do apical systolic grating murmurs in rapid forcibly beating hearts which simulate the murmur of mitral stenosis. From time to time in tachycardias difficulty is experienced in identifying the sounds, and pauses and murmurs of an 'organic' nature are puzzling to time in the cardiac cycle. The apical systolic murmur is still a perplexing problem in a routine examination and several 'tests' are used such as changes in posture and phase of respiration to help in separating significant from non-significant murmurs and it would seem that 90 degree bending might be used as an additional procedure especially in tachycardias—nervous thymotocosis, flutter paroxysmal disorders and neuromuscular asthenia.

While this procedure has been used along with a great many others to influence an attack of paroxysmal tachycardia, a survey of some thirty or forty current textbooks on the practice of medicine heart disease and physical diagnosis together with an equal number of reports here and especially in Britain of men writing on physical examinations of the heart did not disclose mention of the use of a 90 degree bend for the specific purpose of slowing the heart as an aid in its examination. This procedure is not to be confused with the one commonly used in having the patient lean forward to facilitate auscultation.

From time to time as opportunity presents itself an effort is being made to identify this procedure as an aid in specific heart abnormalities. It is hoped that others may try this along with other changes of posture phases of respiration and so on as an additional aid particularly in distinguishing normal from abnormal hearts.

508 North Grand Boulevard

### BILATERAL CONGENITAL MUCOUS CYSTS IN THREE GENERATIONS

THREE GENERATIONS OF MUCOUS CYSTS OCCURRING WITH HARELIP AND CLEFT PALATE

CLAIRE LEROY STRAITH, M.D., D.D.S., DETROIT, AND  
LIEUTENANT HENRY S. PATTON, MEDICAL CORPS  
ARMY OF THE UNITED STATES

It is not too unusual for a physician to have in his active years of practice a family with two or three generations of members with harelip, cleft palate or both. Recently we have observed a family in which through three generations there was a tendency to bilateral harelips and also hypertrophy of mucous cysts in the lower lip of each individual with harelip or cleft palate. We believe this unusual distribution of congenital deformities in one family to be of interest to the profession.

In this family of thirteen persons there were in three generations six persons with bilateral harelips. Some of these patients had an associated cleft palate, as might well be expected, but more interestingly each had a pair of hypertrophied mucous glands on the lower lip. These glands secrete a tenacious mucous material from two very prominent excretory ducts which open just above the mucocutaneous line of the lower lip. They are 1 cm. apart and are placed in the center of the lower lip. On the mucous membrane surface they appear to be blue and about the shape of an almond pit. In the adult they measure 2 by 0.5 cm. These glands have been described as mucoceles, retention cysts or congenital fistulas.



Fig. 1—Five members have had bilateral harelip, cleft palate and mucous glands. The insets show evidence of these deformities in the first and second generations.

Truman W. Brophy<sup>1</sup> pictures these deformities in his textbook on oral surgery. He quoted Sir Arthur Keith's<sup>2</sup> belief that these cysts might be a reversion to a certain species of shark in which such glands occurred. In reviewing the literature and checking with two responsible sources we can find no such evidence in the Elasmobranchs. It is known that as certain amphibians assume the terrestrial life lateral line organs sink beneath the skin and atrophy. This might be an analogue to this condition. Also in fishes the hyomandibular line forms two anterior pores in the lower lip posterior to the symphysis and may be a zoological ancestor to this deformity. In human embryology no clear explanation is to be found for the uniformity and size of these cysts. We do

<sup>1</sup> Brophy, Truman W. Cleft Lip and Palate. Philadelphia, P. I. Lippincott & Co. 1923, p. 60.

<sup>2</sup> Keith, Sir Arthur. Brit. M. J. 2, 361, 1909.

know that mucous cysts occur abundantly in this region and that hypertrophy of the lower lip occurs routinely when there is lack of pressure from opposing tissue, as in harelip. Also we have observed these glands and lips decrease in size after surgical repair of the harelip. We cannot, however, explain to our satisfaction the occurrence of two symmetrical glands when many other such glands are in the vicinity. The occurrence



Fig 2—An example of bilateral harelip and mucous glands in the third generation of this family

must follow mendelian laws in these cases and the glands must have some analogue other than the numerous small mucous cysts found in this region.

In figure 3 we present as accurately as possible the family genetic history. The father had a double harelip, cleft palate and mucous cysts. The mother of the second generation had a congenital syphilitic perforation of the hard palate. This was untreated when her first two harelip children were born.

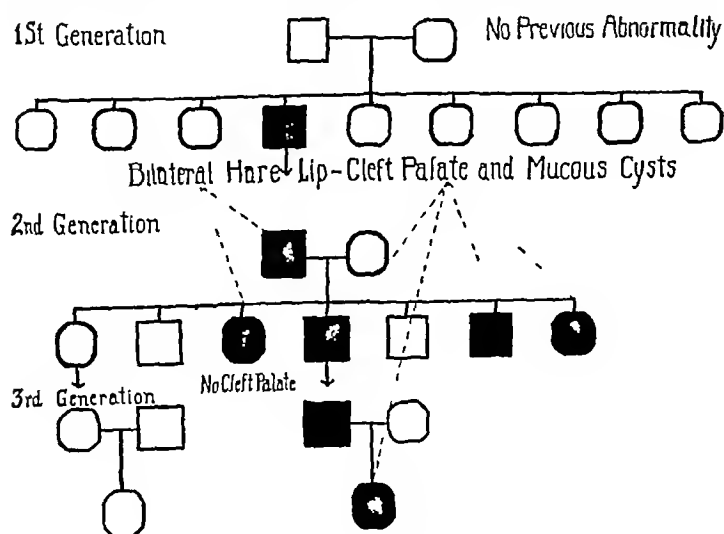


Fig 3—Family history, showing high incidence of congenital abnormalities

This infection was then treated and her Wassermann reaction was negative when the next two harelip children arrived. None of these children have congenital syphilis today. The mother's sisters, however, are under treatment for congenital syphilitic lesions. We do not feel that this disease influenced the frequency of deformities in her offspring. This same mother's syphilitic palate lesion came on spontaneously and healed under antisyphilitic therapy.

In figure 1 some of the members of this unusual family are shown with their bilateral mucous glands of the lower lip.

Figure 2 is an example of double harelip and bilateral mucous glands before surgery.

We have found that simple excision of the gland and some tissue reduces the size of the lip and eradicates the glands. Of course no glandular tissue should be left for fear of recurrence.

#### CONCLUSION

We report three generations of a family, having six of thirteen members presenting bilateral hypertrophy of mucous cysts associated with cleft palate and harelip deformities. It would appear that in this family the genetic factor responsible for these glands is as dominant as is the harelip factor. Simple excision is the treatment of choice. (These cases are presented as we have not found three generations of bilateral mucous cysts described in the literature before, also because of the relative infrequency of the condition.)

1713 David Whitney Building

#### THE TREATMENT OF CREEPING ERUPTION WITH SODIUM ANTIMONY BISCATECHOL (FUADIN)

DUDLEY C. SMITH, M.D., CHARLOTTESVILLE, VA.

Creeping eruption, or larva migrans, is a condition characterized by progressive, linear burrows caused by the larvae of a number of different parasites. The larvae of flies and intestinal parasites have been reported as causing this condition. The larvae are found most abundantly in warm, sandy soil. They penetrate into the epidermis and migrate slowly, causing intense subjective symptoms. The larvae do not penetrate deeper than the epidermis. The majority of cases in this country result from the larvae of the dog and cat hookworm.<sup>1</sup> This abnormality is apparently most prevalent in the southeastern portion of the United States, especially Florida. There have been seen in this clinic 2 cases which were acquired on the beaches of Virginia.

The treatment usually recommended is freezing or cauterization of the skin at the site of the parasite. The parasite is usually present in the area around the advancing end of the burrow within a radius of 1 centimeter. Local treatment in this area is not uniformly successful in producing a cure. In cases presenting a large number of lesions this type of treatment has disadvantages.

Recently (Jan 22, 1943) a 2½ year old boy was seen at the University of Virginia Hospital with a condition characteristic of creeping eruption. His history is as follows:

In the latter part of September 1942 the patient was living in New River, S. C. His mother first noticed the migrating linear eruption on the left foot. This started as a red spot and advanced in an irregular line. There was intense itching. Later a number of similar lesions developed in the perineal and perianal areas. The symptoms were so severe that the child had difficulty sleeping. A number of local applications failed to give symptomatic relief or improve the condition. No attempt was made to identify definitely the type of larva.

Because of the age of the patient and the location of the eruption, the usually recommended measures for local treatment presented difficulties. Sodium antimony biscatechol (Fuadin), used with success in other protozoal diseases, such as heartworm in dogs and Vincent's stomatitis, was therefore considered for treatment in this case. A 63 per cent solution was used, of which 2 cc solution was given intramuscularly and the home physician was to continue this dosage at daily intervals for five days, discontinue for one week and then give five more similar daily injections. The first injection was given on January 22. On February 24 Dr. J. F. Hubbard, the family physician, reported that the boy was started on 2 cc intramuscularly daily beginning January 23 and given five doses. After the lapse of a week the medication was started again with 2 cc intramuscularly daily for three doses. The eruption began to clear up after two or three doses of the first series.

From the Department of Dermatology and Syphilology, University of Virginia Department of Medicine.  
I Kirby Smith, J L Dove, W E and White G T. Creeping Eruption Arch Dermat & Syph 13 137 (Feb) 1926

and was entirely gone by the time the fifth dose had been given. The second series was begun, but as the child seemed entirely well and was sleeping all night, which he had not done for a long time, the treatment was discontinued after the third injection of the second series, at his mother's request. There was no recurrence.

On February 15 the patient's mother stated "From the first injection of Fuadin Bobby's eruption began to dry up, no more has appeared and he has had no bad reaction whatever." On March 13 the boy was examined again. There were no gross or subjective evidences of larva migrans.

#### COMMENT

Search of the literature reveals no reference to the use of Fuadin in the treatment of creeping eruption. Antimony (formula not mentioned) was used by Cawston<sup>2</sup> without success. The improvement here reported was so prompt and permanent that this record is submitted with the hope that physicians in areas where the infestation is more prevalent will give this agent further trial.

### Special Article

## AMERICAN HEALTH RESORTS

### THE PHYSICAL EQUIPMENT FOR ADMINISTRATION OF HEALTH RESORT TREATMENT

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*These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.*

#### OUTLINE

##### I General Plans

- A Baths
- B Hydrotherapy
- C Hot Mineral Water Packs
- D Massage and Special Treatments
- E Inhalations
- F Mechanotherapy
- G Mud Baths and Packs
- H Drink Halls
- I Linen and Service Rooms
- J Attendants' Rooms
- K Swimming and Mineral Water Pools

##### II Technical Equipment

- A Storage
- B Metals Used for Storage and Distributing Systems
- C Heating of Mineral Waters
- D Boiler and Pumping Plant
- E Laundry Facilities
- F Bath House Fixtures and Equipment
  - 1 Bath Tubs
  - 2 Packs
  - 3 Hydrotherapy

##### III Methods of Cleaning and Sanitation

The successful administration of treatments in a health resort depends to a considerable degree on the physical equipment available and the intelligent use of these facilities.

#### I GENERAL PLANS

The design for any institution depends first on the number of treatments to be given and, second, on whether or not the institution itself provides the entire care of the patient, including living accommodations and treatments. A system of multiple units is presented which can be applied in either the small or the large institution.

The buildings required for administration of treatments will differ somewhat with the type of water and nature of the service provided. Fundamentally, most institutions will utilize mineral waters or muds in some way. Most places are equipped to provide additional hydrotherapeutic treatments, various forms of packs and massage. In some places further specialization may include the use of waters for inhalations, the application of physical exercise as mechanotherapy and the utilization of light and electricity in various forms.

In planning a bathing establishment it is also necessary to determine, as already mentioned, whether it is to be an independent unit or part of a hotel or sanatorium. In the former, adequate space must be provided to allow for the proper rest period following the treatment. If the bathing unit is a part of the hotel, the rest period can be provided by returning the patients to their rooms. This will allow for more rapid turnover of bathing facilities and increase the number of daily treatments per unit to the maximum.

In the bathing establishment the control office provides for the collection of charges, the checking of valuables and the assignment of patients to the various treatment sections. In general, separate sections with duplicate equipment must be provided for men and women. In larger institutions several separate sections may be connected to a central lobby. These sections can be used for either men or women, depending on the requirements.

**A Baths**—Provision for bathing is usually made with individual tub units. In a very few resorts the treatments are given in a natural bathing pool. The most practical unit both for privacy and for efficiency consists of a tub room, connected with two rest rooms, all of which must be directly accessible from a hall or passageway. This provides for adequate rest space, service and privacy and allows for more frequent utilization of the technical equipment. The number of such units will depend on the volume of work. Figure 1 is a sketch showing an arrangement of a semiprivate bath and rest rooms.

In some places the strictly private room arrangement is in use. Here the patient has a tub and rest couch in the same room. This private room arrangement is an expensive installation in that it ties up the tub equipment during the entire rest period of the patient, and in general it provides no additional privacy. In some institutions the bathing section may be arranged in a series of treatment cubicles where the bath or other associated treatment is given. The patient is then sent to a general rest room in another corridor. Aside from the inconvenience of going from the treatment room to the rest room and the lack of privacy, this arrangement is particularly satisfactory where the demand for treatments is large.

In any case the particular plan selected will depend on the type of the clientele.

<sup>2</sup> Cawston, F. G. Creeping Eruption at the Natal Coast. *J. Trop. Med.* 37: 374-375 (Dec.) 1934.  
From the Medical Department of the Saratoga Spa.

**B Hydrotherapy**—A hydrotherapy department is usually separated from other treatment sections and should be complete in itself with hot room, steam room, electric cabinets, rubbing tables, douche stall with control table and resting facilities. In small installations the hot room and steam room may be omitted for lack of space.

Arrangement of the various units in this department for convenient and efficient operation is shown in figure 2. The technical details of these units will be considered in a later section.

**C Packs**—In many bathing establishments some form of pack is utilized as an adjunct to the bath or as a separate treatment. In smaller institutions, packs may be prepared in the mineral bath tub. This arrangement generally is not satisfactory because it limits the use of the tub for baths and frequently proper facilities for preparing the pack cannot be provided. It is much better to have a hot pack department with cubicles adjacent to the bathing section and space for the proper equipment.

**D Massage and Special Treatment**—Provisions for massage may be arranged in a separate massage room in the bathing section or it may be given in the rest

tunes allowing for individualization and economy of operation in small departments. For practical use these cabins are large enough to accommodate one chair and are about the size of a telephone booth.

The wall cubicle allows the patient to sit at a small treatment table or sink, where provision is made for breathing the nebulized mineral waters either through the nose or mouth and where accessory apparatus is available for administering medicated oils in finely nebulized vapors.

**F Mechanotherapy**—Mechanotherapy rooms in general are large halls provided with varying apparatus to allow both for general and for local exercise. The apparatus may be either for active or for passive exercise. In the former the patient provides the motive power, while with the passive group some source of power, either central or local, must be provided to operate the machines. If the problem is one of general exercise such as is associated with a reducing program, provision should be made for such types of apparatus as the electric horse or camel, stationary bicycle, rowing machine, chest weights and mechanical and vibratory massage. If the program of treatment is more particularly rehabilitation, then it is necessary to have the types

of apparatus which will allow for the exercise of individual joints. A large series of the latter group have been worked out by Zander and can be applied to a wide range of conditions. Their use in this country today is extremely limited. Many physicians prefer to rely on a trained attendant rather than on the machine, which lacks adaptability. The requirements for a complete mechanotherapy unit are large from the standpoint of space and of mechanical equipment. These units are therefore

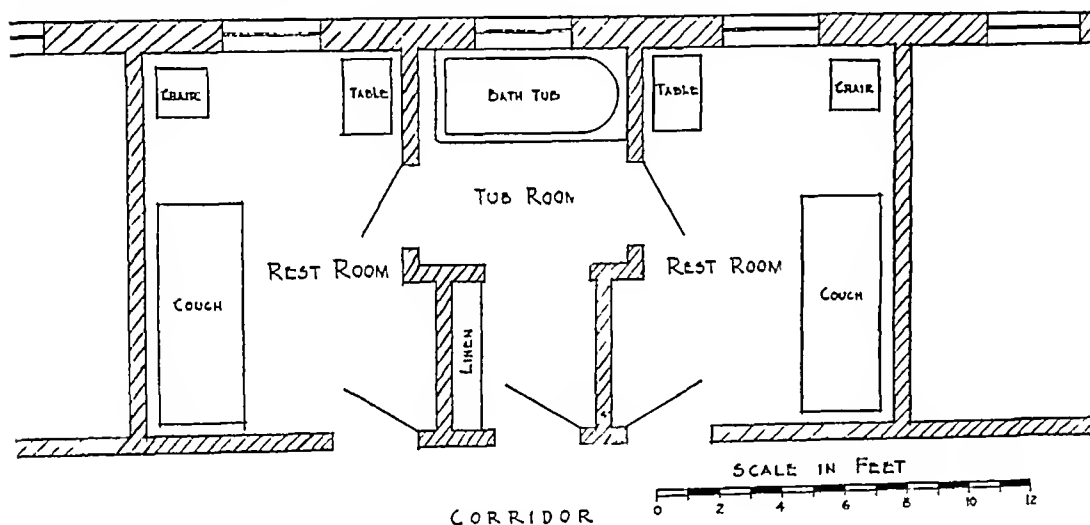


Fig 1—A semiprivate bath arrangement

room itself if it is of sufficient size to accommodate a portable massage table. The first arrangement is satisfactory to the large majority of patients. A few may desire the greater privacy afforded by the second plan.

Additional treatment, such as the use of infra-red rays, ultraviolet radiation and various electrical treatments may be combined in a room similar to that used for massage. Such rooms should be in or near the bathing section, as these treatments are frequently combined with the bath and carried out by the same attendant.

**E Inhalations**—The inhalation department is a separate division which can be located in a wing of the bath house or in a separate building. Provisions can be made for three units: first a large room for group treatment, second, an individual cabin and, third, a table unit in a wall cubicle.

In the group treatment room the atmosphere is saturated with the gases directly from over the mineral water springs or with the finely nebulized vapors of the mineral water. Here the physician has no opportunity of individualizing for his patients unless a series of rooms at different temperatures are provided.

In the individual cabin, mineral water vapors of various concentrations can be given at different tempera-

found only in the larger health resorts. In many places, however, a limited number of exercise machines may be used to advantage in smaller space.

**G Mud Baths and Packs**—The administration of mud baths calls for elaborate equipment. The necessary means for supplying, storing, heating and preparing the mud for the bath, its transport to the tub and its disposal after use all call for special consideration and attention. For practical purposes mud baths should be considered only when adequate facilities and ample space can be made available. A separate building is most desirable. The bathing unit in this building must be larger than the three room unit described for mineral water baths, as two tubs must be provided: one for the mud bath with a tub adjacent for a cleansing bath following the mud treatment. Therefore the administration of mud baths should be attempted only after careful consideration of all the facilities required.

On the other hand, the use of mud for packs does not require so complete a layout. The pack may be a full body pack omitting the upper chest or it may be limited to local packs on an extremity, the liver region, spinal region and the like. Here the treatment unit can be made up of individual pack rooms or cubicles surrounding a central mud heating unit.



**H Drink Halls**—In practically all health resorts, provision is made for the internal use of the mineral waters. The simplest arrangement, of course, is to have the patients go directly to the spring. In some places the mineral water is piped directly from the spring to a special section of the general bathing establishment. In other places a separate building or drink hall provides facilities where many patients can obtain the water as prescribed. Also, if possible, it is of value to have music or concerts during the day when the waters are usually taken. The extent of this phase of the work will depend on the number of patients coming to the health resort for treatment.

**I Linen and Service Rooms**—Because of the large quantities of sheets and towels required, an adequate supply can best be maintained if a laundry is run in connection with the institution. Each bathing wing or group of bath rooms should be provided with a linen room in which reserve sheets, towels and other materials used in the actual work of the wing may be stored. The service or linen rooms are usually connected by dumb-waiter with the basement through which the laundry and general service is operated.

**J Attendants' Rooms**—In planning a large bathing establishment it is of real importance to provide adequate facilities for the attendants where they may have locker space, shower baths and tables for eating lunch. It has been found that the provision of such space pays dividends in the better satisfaction of the staff and in removing all evidence of street clothing from the patient's vision.

#### K Swimming and Mineral Water Pools

—In many health resorts, provision is made for the utilization of the natural water in swimming pools. These pools are generally provided in a separate building, although in some places they may be a part of the treatment unit. The size of a swimming pool depends on the number of guests to be accommodated. General and technical descriptions for the proper arrangement, operation and control of swimming pools are available.

In some places special treatment pools are provided in which the natural mineral water is used in exercise treatments, either for the patient convalescent from poliomyelitis or for the patient with chronic arthritis. Here the size, shape and necessary provisions for construction have been outlined by Lowman.<sup>1</sup>

#### II TECHNICAL EQUIPMENT

Spas are usually built around a mineral spring or group of springs that have some proved medicinal value for either internal or external use or for both. The first and most important consideration therefore, in the establishment of a spa is the study of the mineral

water supply and the equipment necessary to conduct it to the place of utilization.

The first thing to determine is whether or not the supply is adequate and sufficiently uniform in flow and composition to warrant the contemplated development. Considerable time and expenditure of money may be involved in gaining such information. If the springs are shallow natural flowing springs, both the flow and the mineralization may vary at different periods of the year. Therefore, frequent measurements of flow and partial chemical analyses should be made over several seasons to determine such facts. If the wells are artesian in nature and the flow is a natural one there is apt to be less variation, but if pumping is required studies must be made to establish the rate that will assure a uniform mineralization. When it has been definitely established that the mineral water supply is satisfactory, methods of storage and distribution must be planned.

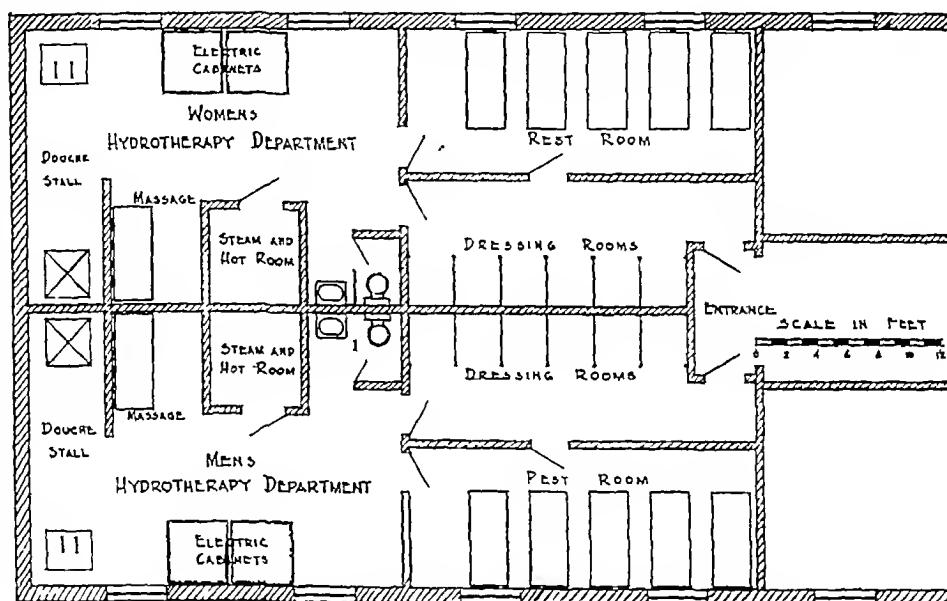


Fig 2—Arrangement of units in hydrotherapy department.

**A Storage**—Methods of storage are dependent entirely on the nature of the water, the extent of the supply and the volume demanded. The volume demand at some period may exceed the supply. In such cases larger storage may be required. No set rule can be made to apply to all waters with the exception that waters that come from the darkness should be kept in darkness.

Light affects all artesian waters in one way or another, such as the promotion of the growth of algae in open reservoirs or the precipitation of iron when exposed to the air.

Waters that contain no volatile gases or salts that would be precipitated may be stored in the covered concrete reservoirs of either a gravity or a pumping system.

Mineral waters containing either carbon dioxide or hydrogen sulfide gas should preferably be stored in closed systems under pressure and entirely free from contact with the air. Such storage will prevent the precipitation of iron and other minerals that are common constituents of gaseous waters. No method is known for the satisfactory storage of waters containing radon (radium emanation).

<sup>1</sup> Lowman, C. I., Roen, Susan G., Aust, Ruth, and Paull, Helen G. *Technique of Underwater Gymnastics*. Los Angeles: American Publications Inc., 1917.

Waters that flow from the ground at elevated temperatures usually need some cooling before entering the bath tub or treatment room. This cooling can be accomplished by holding the water in storage for a definite time or, as is done in some resorts by passing the water through radiators which furnish required heat for other purposes.

If water is stored under pressure, proper control must be installed so that the pumps work automatically either directly on the well or from pump chambers into which the spring water flows. If the waters are highly carbonated, the system from the well to the storage tanks must be entirely closed and the water conducted through the distributing lines to the baths with the least possible agitation to prevent dislodging the gas. The water should be brought into the tub at or near the bottom through a fixture so designed that smooth flow and even distribution are accomplished.

*B Metals Used for Storage and Distributing Systems*—Special attention must be given to the type of metal used for the tubing of wells, tanks used for storage and the distributing lines. Waters that are alkaline in nature and are free from excess of carbon dioxide or hydrogen sulfide can be handled most economically by using a good grade wrought or cast iron pipe with steel pressure tanks that may or may not be coated on the interior with a protective plastic or rubber base paint.

Mineral waters containing large excesses of carbon dioxide or hydrogen sulfide are the most difficult to store and distribute. They are always very corrosive toward metals, particularly iron or steel, and wherever metals are used, means must be taken to use protective coatings or to establish a chemical protection, the nature of which can be determined only through chemical study of the water. The basis of such treatment is the precipitation of an insoluble substance on the metal.

Pure copper and some of the copper alloys are the best metals to be used with the carbonated saline waters, in conjunction with steel pressure tanks that are either glass lined or protected with a suitable acid resistant paint. For conducting carbonated waters that are to be used internally, red brass pipe that has been tin coated is the most satisfactory equipment. Most mineral waters of the carbonated type have a very drastic initial action on pure copper, but after a short time a coating is formed on the metal that protects it from further attack.

Sulfur waters can be handled in copper alloy pipe or in wooden stave pipe. Iron pipe lasts but a short time with these waters.

Bath tub fixtures should be made, wherever possible, of cast stainless steel. Nickel and chromium plated fixtures do not withstand the action of most mineral waters. They are affected by salt waters, alkaline waters, sulfur and carbonated waters.

*C Heating of Mineral Waters*—The heating of mineral waters is probably the most bothersome and expensive problem associated with spa operation. This problem is encountered in all types of waters except those that issue from the ground in the form of hot springs.

Waters that are brines containing as their main constituents sodium chloride or soluble salts of magnesium and calcium can be heated to sufficiently high tempera-

tures for the baths in the ordinary heating equipment designed for fresh water with minimum difficulties caused by scaling or corrosion.

Waters containing large volumes of carbon dioxide gas along with the bicarbonates of the alkaline earths are the most difficult to handle. On heating carbonated waters large volumes of carbon dioxide gas are liberated and salts of lime, magnesia and iron are simultaneously precipitated, coating tanks, pipe lines and fixtures with hard scale that reduces to a minimum the efficiency of heating units and in a very short time renders all small lines useless.

Much study has been given to the heating of these waters both here and abroad. In many places in Europe the water is heated to the required bathing temperature directly in the tub by a small radiator through which high temperature steam is passed. The radiator itself is supported on a swing joint so that when not in use as a bath heater it is swung up on the wall, where it may either be turned off or used as a room heater. This method produces a fine bath with high carbonation but has two very objectionable features. First, large volumes of carbon dioxide are liberated in the room where the patient is to be treated and the atmosphere becomes very dense with the gas, making breathing difficult. Second, the heater itself after short usage becomes coated with scale that chips off when the steam is turned on for a succeeding bath. This is usually very objectionable to the patient. Instantaneous type of heating of the water as it enters the tub has been tried, but without success. The gas is liberated from the water so rapidly that the finished bath is absolutely flat.

At Saratoga Spa a special pressure heating system has been designed and in use many years with highly satisfactory results. The heater tanks are kept under constant pressure and are designed so that the free gas forms a cushion at the top of the tanks. Heat is applied through a copper steam coil in the bottom of the tank and the temperature is thermostatically controlled at 135 to 140 F. It has been found that at higher temperatures excessive precipitation occurs and the iron in the water oxidizes very rapidly when the water is drawn in the tub. As the heating proceeds some carbon dioxide is liberated and the excess pressure produced thereby is relieved through an automatic valve on top of the tank. The carbon dioxide thus bled off is trapped into a sewer line. The hot water, saturated with carbon dioxide, is drawn directly into the bath tub and the preparation of the bath completed by adding cold, highly carbonated water directly from storage.

The scale formed in heating is trapped in the tank, where it can easily be removed. The atmosphere of the bath room is nearly normal because of the elimination of the large volume of carbon dioxide gas at the heater tank.

*D Boiler and Pumping Plant*—A central boiler plant is desirable in all spas where the patronage is large. The source of heat may be derived from oil, coal or gas, depending on which is most economical. Wherever possible, oil or gas should be given first consideration because of the ease of automatic control, the absence of ash and smoke nuisance, and the lower maintenance cost. If coal or coke is used, automatic stoking should be installed.

The boiler plant should be of much larger capacity than the usual plant where there is a steady steam load. Unusual and sudden steam demands are the rule at most spas at certain hours of the day, and this demand must be met by providing liberal boiler capacity and steam reserve.

The spa buildings should be grouped conveniently around the boiler plant and connected with it by subways for carrying both steam and water lines, thus affording easy access for repairs.

Pumping equipment, whether steam or electric, should be long stroke and slow moving so as to reduce the agitation of water to a minimum.

**E Laundry Facilities**—The linen demand for spa work is large, from four to eight pieces being required for each treatment. Since it is not always possible to provide adequate linen through an outside service, provision for a laundry building should be given thoughtful consideration. Such a building should be located near the boiler plant for easy steam supply and requires the installation of washers, air driers, centrifugal driers, ironers, necessary baskets and tables, and small trucks for collecting and delivering linen. Adequate space should be provided for the storage of linen and the various chemical supplies needed for operation.

**F Bath House Fixtures and Equipment**—Most spas provide, in addition to mineral water baths, adjunct treatments including mineral packs, mud packs, various types of douches and sprays, hot rooms, steam rooms and water rubs. The materials and design of equipment must be chosen with the same care as other mechanical equipment.

**1 Bath Tubs**—Bath tubs should be large enough to immerse a patient completely in a relaxed position. Usually the tub should be about 6 feet long by 24 inches deep by 24 inches wide, to meet this condition. These dimensions provide a tub that is suitable for the taller patients. A foot rest made of stainless steel or some resistant metal, provided with a base and four rubber suction cups, can be placed anywhere on the bottom of the tub by the attendant to suit the comfort of the shorter patient.

Tubs made of porcelain or iron coated with acid resistant enamel are most suitable. Other materials used for tubs include native mineral rock, wood, slate or concrete. Sometimes concrete is covered with a metal sheeting such as copper or aluminum. The latter has been used with sulfur waters.

**2 Packs**—Hot packs may be given either with mineral water or with fresh water. If fresh water is used, the autoclave type of pack heater is most convenient. The pack material is placed on shelves in the autoclave and steam is kept flowing through, so that the packs become wet and heated to the proper temperature.

If the packs are to be prepared from mineral water, a hot pack sink must be provided. This sink should be of porcelain or slate, so that it may be easily cleaned with acid. Hot mineral water is piped to it and a suitable wringer attached for wringing the packs.

Mud packs require much special equipment. There should be rooms with suitable couches on which the patient reclines during the application of the packs. These rooms must be provided with either a tub or a shower to cleanse the patient after the application of the packs. Resting facilities must also be provided. The

equipment for grinding, mixing and heating the mud should be installed in a separate room. Flowing steam is passed through the outside jacket, and either hand or motor operated paddles revolve to bring the mud to a uniform temperature. Grinding equipment is similar to that used for paint grinding and can be obtained from the same manufacturers.

**3 Hydrotherapy**—In considering the technical features of the hydrotherapy department, the hot rooms should be large enough to accommodate several people reclining in chairs of the steamer type, covered with a sheet to protect the patient from burns. The source of heat can be steam radiation provided in the room itself or circulated conditioned air from a conditioning plant. Whatever the source of heat may be, when moisture is provided much lower temperatures can be used. The usual temperatures are between 140 and 160 F, depending on the amount of humidity present.

Steam rooms are usually small and are entirely of tile with a domed ceiling to prevent hot condensed water from dropping on the patient. The steam is introduced into the room through atomizing nozzles so as to produce a fog. Marble slabs are provided for the patient to sit or lie on during treatment.

Both hot and steam rooms should have windows so that the attendant can watch the patient.

Rubbing tables are constructed of marble on which sponge rubber mats are placed. Directly over the rubbing table a series of sprays are suspended which are controlled by a mixing valve. These sprays are used following the salt or soap rub or may be used on the patient while the attendant administers massage.

The douche equipment is located in a shower stall the walls of which are usually constructed of slate, marble or tile. The floor should be of tile and preferably of the nonslip type to avoid accidents.

At the extreme end of the stall a shower equipment is placed. This shower is provided with a rain douche applied from overhead, and needle sprays that impinge on the patient from four directions, covering every part of the body but the face. The temperature and pressure of the water are controlled by an attendant through a douche control table placed at the opposite end of the stall. This table is also equipped to administer the "Scotch," jet and fan douches.

### III METHODS OF CLEANING AND SANITATION

Particular attention must be given to keeping any bathing or hydrotherapy department scrupulously clean and sanitary.

To carry out such a program the rooms, floors, walls and equipment should be constructed of materials such as tile, marble or porcelain that lend themselves to easy cleaning and sterilization.

All equipment that is used in conjunction with sulfur water or waters containing iron should be of a material that will stand the action of acids. It is often necessary to remove the stains produced with an abrasive powder containing acid, or a dilute liquid acid to ensure proper appearance.

Floors in the bath rooms and hydrotherapy rooms should be cleaned with water containing some efficient antiseptic such as the chlorinated compounds. It is not practical in most bath houses to use foot baths, as the patient must go from one treatment room to another. The floors themselves, therefore, must be thoroughly cleaned and disinfected each day.



## Council on Medical Service and Public Relations

THE COUNCIL HAS AUTHORIZED THE PUBLICATION OF THE FOLLOWING STATEMENT

I. W. HOLLOWAY, Jr., Acting Secretary

### THE WAGNER-MURRAY-DINGELL BILL

The legislation introduced in the United States Senate, June 3, 1943 by Senator Wagner and Senator Murray as S 1161 and in the House of Representatives by Congressman Dingell as H. R. 2861 proposes radical amendments to the Social Security Act. Others have characterized it as "fantastic in scope, idealistic in objective and extremely expensive in its economic aspect."

The Council reserves judgment on the amendments proposed that are not directly concerned with medical care. Concern must be expressed, however, over the effect on the health of the people of that part of the legislation that undertakes to create a federally controlled system of compulsory sickness insurance to include an estimated 110,000,000 wage earners, self-employed persons and the dependents of both classes. Such a system would be created by section 11 which proposes to amend title IX of the Social Security Act to provide "Federal Medical, Hospitalization, and Related Benefits."

By a revolutionary process, the enactment of section 11 would undermine and destroy the American system of medicine that has developed in an evolutionary, healthful manner over the entire period of the history of medicine in the United States.

American medicine has developed an unexcelled quality of medical education. The enactment of section 11 would break down our system of medical education. It would remove the incentive that stimulates the student to acquire the best medical education obtainable by offering that student a regimented practice, federally supervised and controlled. This result the sponsors of the legislation inferentially apprehend by including a provision for federal grants-in-aid to stimulate medical education.

American medicine has made available to the people an unexcelled quality of medical care. The enactment of section 11 would attenuate the quality of medical care available to the people by imposing on physicians conditions of practice under which good medical care could not possibly be rendered. Medical practice would deteriorate from a highly personalized professional service to an impersonal, regimented service.

American medicine has produced unexcelled medical research by individuals. The enactment of section 11 would lessen the incentive for individual medical research by making it impossible for the results of that research to be utilized to their fullest extent. This result the sponsors of the legislation inferentially apprehend by providing for federal grants to *nonprofit institutions and agencies* to encourage and promote research.

American medicine has been responsible for a state of health of the people unexcelled in any other country. The enactment of section 11 would result in a deterioration of the health of the people, for if medical education suffers, if the quality of medical care available to the people becomes attenuated, if the incentive to individual medical research is removed, the resulting harmful effect on the health of the people will be inescapable.

#### WHAT DOES SECTION 11 PROPOSE?

Section 11 proposes to amend title IX of the Social Security Act to provide general medical, special medical, laboratory and hospitalization benefits to every person currently insured under the act, to the wives and children of such persons and to certain other groups who may voluntarily bring themselves within the coverage of the act.

To provide these benefits, the Surgeon General of the United States Public Health Service would be authorized to make all

necessary arrangements. He would, in effect, become the autocrat of American medicine. Although every physician legally qualified by a state may, if he consents to regimentation, participate in this compulsory health insurance scheme, the Surgeon General may by regulation prescribe the conditions of participation. He too would be authorized to determine what compensation the participating physicians may receive and would have the final say as to the manner in which they will be compensated, whether on the basis of fees for services rendered, on a per capita basis, on a salary basis or on any combination or modification of these bases. He would be authorized to limit the number of insured persons a particular physician may treat. He would be authorized to determine what constitutes the services of a specialist.

Ostensibly to assist the Surgeon General there will be created a National Advisory Medical and Hospital Council to be appointed by the Surgeon General, of which he will himself be chairman. This council will have no authority, it will be authorized only to "advise." While an insured individual may select, normally, from the list of participating general practitioners the physician to treat him, he will be denied that privilege if the physician's quota of patients, as established by the Surgeon General, is already filled. If he is in need of the services of a specialist, he will have no voice in the selection of that specialist. The Surgeon General may arbitrarily assign an insured person to a particular physician if such person does not make his own selection.

The bill provides that in each area the provision of general medical benefit for all insured persons shall be a "collective responsibility of all qualified general practitioners in the area who have undertaken to furnish such benefit." The significance of this provision is difficult to determine. It may signify that each participating physician will be responsible for the quality of medical service rendered by every other participating physician in that particular area.

The Surgeon General would be authorized to determine what hospitals may participate in the scheme. Hospital benefits will range from \$3 to \$6 for each day of hospitalization, not in excess of thirty days, as determined by the Surgeon General with the approval of the Social Security Board. The rates will range from \$1.50 to \$4 for each day of hospitalization over thirty but not exceeding ninety. If the insured is placed in an institution for the care of the "chronic sick" the rate will range from \$1.50 to \$3 a day. Instead of making such payments to the insured individual, the Surgeon General, subject to the approval of the Social Security Board, may make contracts with participating hospitals for the payment of the reasonable cost of hospital service at rates neither less than the minimum nor more than the maximum rates specified such payment to be full reimbursement for the cost of essential hospital services including the use of ward or other least expensive facilities compatible with the proper care of the patient.

Insured persons will also be entitled to certain laboratory and other benefits, the nature and extent of which will be determined by the Surgeon General but which will include chemical, bacteriologic, pathologic, diagnostic and therapeutic x-ray and related laboratory services, physical therapy, special appliances prescribed by physicians, and eye glasses prescribed by a physician or other legally qualified practitioner.

#### TAXES TO PROVIDE BENEFITS

To finance the provisions of this bill, each included employer will be taxed annually at the rate of 6 per cent of his payroll excluding all remuneration paid to an employee in excess of \$3,000 a year, and each insured employee will be taxed 6 per cent annually of the wages received up to \$3,000. Self-employed persons will be required to pay 7 per cent of the market value of their services annually up to \$3,000. States and political subdivisions and their employees will be taxed at the rate of 3.5 per cent up to \$3,000 if such governmental units voluntarily by compact come within the coverage of the Social Security Act.

Of this total tax a certain amount will be credited to a "Medical Care and Hospitalization Account," an amount estimated as in excess of \$3,000,000,000 annually

#### GRANTS-IN-AID

Section 12 of the bill, as previously indicated, provides grants-in-aid as a stimulus for medical education, research and for the prevention of disease and disability, in apparent recognition that the enactment of the bill will require such a stimulus. The Surgeon General of the Public Health Service will determine who will be the recipients of such grants and the specific amounts that will be granted. He will determine too whether a particular project is worthy of stimulation.

The enactment of this bill will destroy the private practice of medicine. It will create a political system of medicine dictated by a federal bureaucracy. It will lower the high health level of the people of the United States. Its enactment should be vigorously opposed.

### Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

HOWARD A. CARTER Secretary

#### ROCKE HYDROTHERAPY FOOT AND ARM BATH ACCEPTABLE

Manufacturer William Roche, 2605 Noyes Street, Evanston, Ill.

The Roche Hydrotherapy Foot and Arm Bath is a device for the application of hot, whirling, aerated water (with a vibratory action) to the feet and arms. The apparatus consists of a tank 17 inches in diameter which is mounted on a base 34 inches in height, containing a one-fourth horsepower motor. Incorporated in the tank are a circulator unit, foot plate and air intake.

Eighteen gage steel with three coats of porcelain enamel is used in the construction of the tank. According to the manufacturer this material is used because it can be more easily obtained during the present emergency. The tank is protected on the outside by a steel skirt extending from the base to the top. The inside of the tank is white and the outside is gray. The circulator unit is constructed of die cast aluminum with self-oiling bronze bearings and is direct motor driven. The foot plate and air intake cover are of chrome or cadmium plated steel. A rubber tube with aluminum control valve comprises the air intake. The motor is rubber mounted with three conductor rubber covered cord and is fully grounded.



Roche Hydrotherapy Foot and Arm Bath

The steel tank with three coats of porcelain enamel, together with the steel skirt jacketing the tank, is said to tend to slower cooling of the liquid. The temperature of the liquid while in operation normally drops about 2 degrees in thirty minutes, temperature change also depends on room temperature. An immersion hot water heater is available.

The apparatus was investigated clinically by the Council in the physical therapy department of a large hospital. In this investigation the device was found to satisfy the claims made for it by the manufacturer.

The Council on Physical Therapy voted to accept the Roche Hydrotherapy Foot and Arm Bath for inclusion in its list of accepted devices.

### Council on Pharmacy and Chemistry

#### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

**CHORIONIC GONADOTROPIN** (See New and Non-official Remedies, 1943, p. 427)

The following dosage forms have been accepted

**WINTHROP CHEMICAL CO., INC., NEW YORK**

**Vials Korotrin 100 International Units** 2 cc. A powdered preparation of chorionic gonadotropin admixed with sucrose which, when diluted with the accompanying 2 cc. of sterile distilled water containing 0.2 per cent of metacresol, provides a solution having a potency of 50 international units per cubic centimeter. Marketed in boxes of 5 ampuls and 25 ampuls with diluent for each ampul.

**Vials Korotrin 500 International Units** 2 cc. A powdered preparation of chorionic gonadotropin admixed with sucrose which, when diluted with the accompanying 2 cc. of sterile distilled water containing 0.2 per cent of metacresol, provides a solution having a potency of 250 international units per cubic centimeter. Marketed in boxes of 5 ampuls and 25 ampuls with diluent for each ampul.

**Vials Korotrin 1,000 International Units** 10 cc. A powdered preparation of chorionic gonadotropin admixed with sucrose which, when diluted with the accompanying 10 cc. of sterile distilled water containing 0.2 per cent of metacresol, provides a solution having a potency of 100 international units per cubic centimeter. Marketed in packages containing 1 or 10 vials with 1 or 10 bottles of diluent.

**Vials Korotrin 5,000 International Units** 10 cc. A powdered preparation of chorionic gonadotropin admixed with sucrose which, when diluted with the accompanying 50 cc. of sterile distilled water containing 0.2 per cent of metacresol, provides a solution having a potency of 100 or 500 international units per cubic centimeter. Marketed in packages containing 1 or 10 vials with 1 or 10 bottles of diluent.

**DIETHYLSTILBESTROL** (See New and Nonofficial Remedies, 1943, p. 403)

The following dosage forms have been accepted

**THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO**

**Tablets Diethylstilbestrol** 0.5 mg and 1 mg

**Sterilized Solution Diethylstilbestrol** (in sesame oil) 1 mg per cc. 15 cc. containing 0.5 per cent chlorobutanol

**Ampuls Sterilized Solution Diethylstilbestrol** (in sesame oil) 1 mg per cc. 1 cc.

**DIGITALIS** (See New and Nonofficial Remedies, 1943, p. 289)

The following dosage forms have been accepted

**BURROUGHS WELLCOME & CO., INC., NEW YORK**

**Tablet Digitalis Leaf** 32 mg, 65 mg and 97 mg

**THE UPJOHN COMPANY, KALAMAZOO, MICH**

**Ampoule Sterile Solution Digitalis Injection** 2 cc and 10 cc. Each cubic centimeter contains  $\frac{1}{2}$  U.S.P. XII digitalis unit and alcohol 10 per cent as preservative and stabilizer in sterile phosphate buffered solution.

**SODIUM MORRHUATE** (See New and Nonofficial Remedies 1943 p. 310)

The following dosage form has been accepted

**CHEPLIN BIOLOGICAL LABORATORIES, INC., SYRACUSE, N.Y.**

**Ampoule Solution Sodium Morrhuate 5% W/V with Tricresol 0.3%** 2 cc. and 5 cc ampoules and 30 cc vials. Each cubic centimeter contains sodium morrhuate  $\frac{1}{4}$  grain tricresol 0.3% (W/V) as a preservative double distilled water q.s.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 13, 1943

## HYPERTENSION IN MILITARY SERVICE

Some persons, when exposed to the emotional stress of a physical examination, have a temporary rise in blood pressure which subsides in later readings. Little significance is given to such a transient elevation in blood pressure. Physicians assume that, if one or more readings of blood pressure within the normal range are obtained, the possibility of hypertensive disease can be disregarded. However, due consideration should be given to the fact that in many hypertensive persons the level of blood pressure is variable. Wide fluctuations from normal to high levels may occur in intervals of a few hours, and elevations of blood pressure are readily precipitated by emotional strains. These cases apparently tend to develop ultimately into permanent hypertension. In 1,522 patients reviewed by Hines<sup>1</sup> ten to twenty years after the original examination, a high percentage of those presenting excessive variability of the normal blood pressure developed definite hypertensive disease. Master<sup>2</sup> reexamined a group of 50 persons who one to seven years previously had shown labile high blood pressure with fluctuations which included normal values. He found that 76 per cent presented definite permanent hypertensive levels. Rühl<sup>3</sup> as early as 1927 had interpreted the labile hypertension as the early stage of essential hypertension. There is no clear-cut line of delimitation between the normal person who shows occasionally an increase in blood pressure under various influences and the borderline hypertensive patient. Essentially the two represent different degrees of the same condition.

As would be expected in the light of these observations, the rules established by the Navy for acceptance and rejection of candidates have resulted in the acceptance for active duties of borderline hypertensive

patients. A number of instances in which this condition has led to the development of clinical symptoms and unfitness during active campaign is reported by Master<sup>4</sup>. The ideal solution would be to reject all persons presenting hypertensive levels at any one reading. However, when statistical figures are considered the incidence of hypertension in the general population would be so high as to prevent the attainment of the minimum goal required by the armed forces.

Considering the implications of this difficult problem, Master suggests that a different approach be adopted. The question of fitness for active duties in the borderline cases is not so much dependent on the height and variability of the blood pressure as on the absence or presence of complications of hypertension. An uncomplicated mild hypertension is compatible with a high degree of physical activity and need not be a cause for rejection. A complete cardiovascular examination, including a roentgenogram of the chest, electrocardiograms before and after exercise tests, examination of the retinal vessels and renal function tests, is necessary in order to determine the presence of cardiac enlargement, myocardial damage, coronary disease, arteriolar lesions and renal insufficiency. On these criteria and not on blood pressure measurements alone should the physician base his judgment as to the suitability of candidates for military service.

## CARCINOGENIC TRANSFORMATION OF FIBROBLASTS IN CULTURE FLASKS

Earle and Voegtlin<sup>1</sup> of the National Cancer Institute have demonstrated that rat and mouse fibroblasts grown outside the body in a medium containing methylcholanthrene, a carcinogenic chemical, are changed into cells which resemble the cells in cultures of sarcoma induced by the injection of methylcholanthrene into the subcutaneous tissue of rats. This transformation appeared to be irreversible. Now Earle<sup>2</sup> reports that sarcoma can be produced by the injection of fibroblasts subjected to the action of methylcholanthrene in culture flasks. When mouse fibroblasts had been cultured in a medium of horse serum, extract of chick embryo and salt solution for 291 days, purified methylcholanthrene was added to the cultures in the proportion of 1 microgram to each cubic centimeter of culture fluid. The cultures were then carried on for different periods, 6, 32, 111, 184 and 406 days, at the end of which they were continued without methylcholanthrene for various periods. The first apparent effect of the carcinogen was

<sup>4</sup> Master, A. M. Cardiovascular Problems in the War. Hypertension and the Navy, Bull. New York Acad. Med. 19 704 (Oct.) 1943.

<sup>1</sup> Earle, W. R., and Voegtlin, Carl. The Mode of Action of Methylcholanthrene on Cultures of Normal Tissues. Am. J. Cancer 34 373 (Nov.) 1938. A Further Study of the Mode of Action of Methylcholanthrene on Normal Tissue Cultures, Pub. Health Rep. 55 301 (Feb. 23) 1940.

<sup>2</sup> Earle, W. R. Changes Induced in a Strain of Fibroblasts from a Strain C3H Mouse by the Action of 20 Methylcholanthrene (Preliminary Report), J. Nat. Cancer Inst. 3 555 (June) 1943.

<sup>1</sup> Hines, E. A., Jr. Range of Normal Blood Pressure and Subsequent Development of Hypertension. A Follow Up of 1,522 Patients, J. A. M. A. 115 271 (July 27) 1940.

<sup>2</sup> Master, A. M. Borderline Hypertension and the Navy During the Emergency. Incidence of Hypertension Among the General Population, U. S. Nav. M. Bull. 41 52 (Jan.) 1943.

<sup>3</sup> Rühl, A. Wie weit ist der genuine arterielle Hochdruck antrömisch bedingt? Deutsches Arch. f. klin. Med. 150 129, 1927.

to slow down the rate of the increase in the size of the cell clumps. Later the cells were changed in shape and became increasingly coherent laterally, forming ribbons and sheets. These changes in the cells continued in successive cultures after the addition of methylcholanthrene to the culture fluid was discontinued. Two cell strains subjected to the carcinogen for 6 and 32 days respectively have been carried on in carcinogen free cultures for about a year without any loss of the induced characteristics. Some months after morphologic changes were noted in the carcinogen cultures, control cultures began to present similar changes. Whether this change in the control cultures was due to the accidental introduction of traces of methylcholanthrene or not will be considered in a later report. "It is thought likely that such trace contamination did occur," but it must have been extremely slight in view of all the precautions against contamination.

On injection into mice (strain C3H) of carcinogen treated cultures of mouse fibroblasts at varied intervals after the withdrawal of the carcinogen, sarcomatous tumors arose at the sites of injections, often as early as 9 days after the injection, and caused death within a few weeks, with or without metastasis. Such tumors were subinoculated successfully. Injections of control cultures with altered cells gave similar results. Nettleship<sup>1</sup> describes the characteristics of the neoplasms which grew from the inoculation of altered fibroblast cultures. The structure was similar to that of the various forms of spindle cell sarcoma in man. Earle and Nettleship both point out that short exposure of cultured fibroblasts to the carcinogen produced cells of a comparatively low neoplastic activity and slightly changed in structure. No metastasis occurred from tumors from these cells. On somewhat longer exposure, the cells became more greatly altered morphologically and there was an increased invasiveness into the surrounding tissues. A number of tumors showed metastases. On still longer exposure of the cells to the carcinogen the cell structure of the tumors arising from them was even more greatly changed, the invasiveness was at least as great, but fewer metastases occurred.

The tumors described arose by the multiplication of implanted cells which came from cultures carried on for many months after exposure to methylcholanthrene. It is not likely that the cells carried over any of the carcinogen to which their remote ancestors were exposed. The implanted cells were cancerous, that is, sarcomatous, cells which multiplied as such on implantation in living mice. After the change from normal fibroblasts under carcinogenic influences, all subsequent generations were cancerous in greater or lesser degree. This change remained irreversible. While it is not difficult to make normal cells and their descendants cancerous either *in vivo* or *in vitro*, it is not yet known how cancerous cells can be made normal again, that is,

no doubt the secret of cancer. The results of the remarkable experiments briefly recounted suggest ways and means for direct attacks on the problems of the irreversibility of the cancer cell.

### Current Comment

#### EPINEPHRINE-LIKE SUBSTANCES IN THE HEART MUSCLE AND SUDDEN DEATH

The cause of unexpected, sudden death can be determined only by thorough postmortem examination the results of which are interpreted in the light of the history of the victim and of the circumstances under which he died. In many such cases chemical methods may be of great value. In an athletic student aged 21 who was found dead in bed the only abnormality discovered by Raab<sup>1</sup> was an excessive amount of epinephrine-like substances or catechols in the heart muscle. Death was not caused by structural changes, by laryngeal obstruction or by poisoning as commonly understood. Raab argues that the death was due to excess of epinephrine-like substances on the basis of the following general considerations. In rats cardiac death takes place when the concentration of such substances in the myocardium exceeds a certain limit, in a series of patients who died from cardiac failure, particularly in cases of hypertension, angina pectoris, uremia and adrenal tumor, he found in the majority an abnormally high accumulation of epinephrine or of epinephrine-like catechols in the heart muscle and, finally, experimental production of fatal heart failure by means of epinephrine and related amines. Raab points out that in human beings, as well as in animals, "severe cardiac episodes and death" have followed the injection of epinephrine hydrochloride, also that ventricular fibrillation, which is regarded as a common cause of sudden cardiac death, may be produced by epinephrine. He notes too the not infrequent reports of rapid death of patients with adrenal tumor, with hemorrhagic necrosis and other lesions of the adrenals. This group, by the way, appears to include cases of death from adrenal insufficiency as well as cases of hyperepinephrinemia. The concentration of epinephrine-like catechols in the heart muscle of the athletic student examined by Raab was not only above the physiologic maximum but the highest in a series of 54 human hearts, normal and abnormal. According to Raab "the most famous case of sudden death of an apparently healthy athlete from 'exhaustion' occurred two thousand four hundred and thirty-three years ago when the marathon runner collapsed, dead, on his arrival in Athens, after having shouted the message of victory over the Persians. It appears most probable from present knowledge that his heart succumbed to ventricular fibrillation due to an acute excessive accumulation of sympathomimetic amines in the myocardium." No doubt the chemical examination of the heart muscle will prove helpful in explaining the nature of sudden deaths, particularly in the case of athletes but eventually in other cases as well.

<sup>1</sup> Nettleship, Anderson. Morphology of Sarcomas Derived from Fibroblasts Previously Treated with 20 Methylcholanthrene *In Vitro* (Preliminary Report). *J. Nat. Cancer Inst.* 3: 559 (June) 1943.

<sup>1</sup> Raab, Wilhelm. Sudden Death of a Young Athlete with an Excessive Concentration of Epinephrine-like Substances in the Heart Muscle. *Arch. Path.* 36: 388 (Oct.) 1943.

## DOCTORS AT WAR TO BE RESUMED

Arrangements have been completed with the National Broadcasting Company to resume the series of broadcasts entitled *Doctors at War*. This will be the fourth series of broadcasts under the general title of *Doctors at War* and will be the ninth annual series of dramatized health programs presented cooperatively by the American Medical Association and the National Broadcasting Company. Owing to radio commitments in connection with the war, the opening of the series has been postponed until January 8. Broadcasts will be given on Saturday afternoons at 5 o'clock Eastern War Time (4 o'clock Central, 3 o'clock Mountain, 2 o'clock Pacific War Time). The series will run for twenty-six weeks. The Medical Department of the United States Army and the Bureau of Medicine and Surgery of the United States Navy have agreed to permit doctors in the armed forces to participate in the programs. The medical departments of both the Army and the Navy will assist in the technical preparations for the broadcasts.

## DEVELOPMENT OF RESISTANT PNEUMOCOCCI DURING SULFONAMIDE TREATMENT

Experimental evidence that the capacity to acquire resistance to sulfonamide drugs occurs *in vivo* was offered by MacLean and his associates<sup>1</sup> in 1939. Pneumococci of infected mice treated with sulfapyridine establish an increasing tolerance to the drug. Lowell, Strauss and Finland<sup>2</sup> in 1940 demonstrated the development of resistance in pneumococci obtained from patients treated with sulfonamide drugs. Sulfonamide sensitive organisms were isolated in 2 cases of pneumonia prior to treatment. After several days of drug therapy and again during a relapse of the pulmonary infection, pneumococci of the same type were isolated and found to be sulfonamide resistant. Recently Hamburger and his colleagues<sup>3</sup> studied sulfonamide sensitivity of pneumococci isolated from a great number of patients both before and after sulfonamide therapy. In none of 168 patients were strains of pneumococci isolated before treatment significantly resistant to the drug. The organisms obtained during or after treatment were definitely more resistant than those obtained before treatment in only 4 of 72 cases treated for less than three weeks. In each of 3 cases treated for long periods (forty-seven days or more) resistant pneumococci developed during treatment. This suggests that sulfonamide resistant organisms may be produced regularly during the clinical use of these drugs. Lesions such as occur in unresolved pneumonia, in which the complete eradication of the bacteria requires prolonged and increased concentration of sulfonamides, and in

endocarditis, in which bacteria have only limited exposure to the drugs, offer the ideal conditions for the development of drug fastness. As pointed out by Hamburger and his associates, even though the development of sulfonamide resistant organisms occurs in a relatively small number of cases, this result may constitute a serious hazard in the future.

## THE SURVIVAL TIME OF HUMAN SPERMATOZOA

One of the serious obstacles to the scientific evaluation of chemical contraceptives has been the absence heretofore of any uniform method of determining the survival time of human spermatozoa. Brown and Gamble,<sup>1</sup> in a series of communications, report the satisfactory use of potassium acid phthalate as a spermicidal agent. This agent is prepared as a watery solution with a known acidity of  $p_H$  4.0. A 2.8 per cent solution mixed with an equal quantity of semen has been found to give spermicidal times of convenient length. When the spermicidal times are measured at ordinary room temperature the results are arbitrarily referred to as the "phthalate time." Variations in temperature exert a considerable effect on the phthalate time. At body temperature the relative spermicidal times vary significantly from those at room temperature. Variations in phthalate time of different semen specimens have been also found large. Nevertheless this method appears to permit evaluation of the relative spermicidal activities of commercial contraceptives, and a number of such preparations have already been tested by this means. Although this apparently represents a definite addition to scientific method, the several variables attached to the procedure indicate that the conclusions must be cautiously accepted and further careful studies at control attempted.

## IMMEDIATE TREATMENT OF WOUNDS AND BURNS

Elsewhere in this issue (page 675) appears an article on the immediate treatment of wounds and burns based on military experience. This work will have far reaching effects on first aid in civilian as well as military life. Many lives can be saved, Gallagher claims, by the early utilization of simple sterile compression dressings to be applied to severe burns or other large surface wounds immediately at or near the scene of injury. The technique is simple and can be employed as a first aid measure by relatively untrained persons. Compression dressings may become standard equipment for all first aid kits. The proper application of these dressings should be made familiar to the police in squad cars, nurses' aides, street car and bus motormen and conductors, firemen, workers in industry and many others.

1 MacLean, I. H., Rogers, K. B., and Fleming, Alexander. M. & B. 693 and Pneumococci, *Lancet* 1: 562 (March 11) 1939.

2 Lowell, F. C., Strauss, Elias, and Finland, Maxwell. Observations on the Susceptibility of Pneumococci to Sulfapyridine, Sulfathiazole and Sulfamethylthiazole, *Ann. Int. Med.* 14: 1001 (Dec.) 1940.

3 Hamburger, J. M., Schmidt, L. H., Sesler, C. L., Rueggsegger, J. M., and Grupe, E. S. The Occurrence of Sulfonamide Resistant Pneumococci in Clinical Practice, *J. Infect. Dis.* 73: 121 (July-Aug.) 1943.

1 Brown, Royal L., and Gamble, Clarence J. Factors Influencing the Survival Time of Human Spermatozoa in a Solution of Potassium Acid Phthalate, *Human Fertil.* 8: 4 (March) 1943, *Studies of Spermicidal Times of Contraceptive Materials* *ibid.* p. 9.



# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## ARMY

### EARLY RECOGNITION AND TREATMENT OF NEUROPSYCHIATRIC CONDITIONS IN THE COMBAT ZONE

The War Department, Washington, D C, recently released Circular Letter No 176, regarding the early recognition and treatment of neuropsychiatric conditions in the combat zone, which is as follows

1 *General*—Any medical officer may be called on to treat neuropsychiatric casualties. Because of the shortage of neuropsychiatrists, the burden of early recognition and treatment of these casualties will fall on medical officers without specialized training. The attention of all medical officers, therefore, is invited to their responsibility for the mental as well as physical health of military personnel.

2 *Incidence*—According to present figures, from 10 to 20 per cent of casualties developing in combat are neuropsychiatric and, in certain engagements, as high as 30 per cent are of this type. It has been found that, when these cases are properly recognized and treated at forward areas, up to 80 per cent can be returned successfully to combat duty, whereas, when improperly evaluated and unnecessarily evacuated to rear areas, only from 5 to 10 per cent can be returned to duty.

3 *Etiology*—a Ordinarily neuropsychiatric disorders are thought to occur only in weaklings or in individuals with personality defects. This is not true. Information at hand indicates that a significant proportion of the neuropsychiatric casualties are occurring in individuals who give no history suggesting predisposition. Under the extremes of stress and fatigue of modern combat, the most stable individual may reach his breaking point. Thus, the presence of neuropsychiatric disorder must be looked for in normal as well as predisposed individuals.

b Factors which precipitate psychiatric disorders are separation from home, regimentation, lack of freedom, lack of privacy, lack of feminine companionship, a feeling of not being appreciated and lack of confidence in leaders. In combat are added extreme fatigue, danger of death and mutilation, exposure to cold, heat, disease, isolation, confusion and hunger. The danger of being a coward, of losing self control as well as responsibility for the lives of others, also plays a role. Insufficient understanding and conviction regarding the need to fight are also factors.

4 *Clinical Types and Diagnoses*—a Considerable confusion exists as the result of current use of diagnostic terms, such as "operational fatigue," "shell shock" and "war neurosis." There is no evidence that any new clinical entity has appeared in this war which would warrant the employment of these terms. It is directed that standard nomenclature for psychiatric disorders be utilized wherever possible.

b In certain theaters it has been found that the term "psychoneurosis" produced in the patient's mind the idea of war causation and incurability and thus materially interfered with recovery. The term "exhaustion," on the other hand implied to the patient nonspecific etiology, natural occurrence and speedy recovery. It was also in a measure true in that in the majority of cases this exhaustion was a strong contributory factor. If it is found expedient to use the term "exhaustion" as a preliminary diagnosis for combat neuropsychiatric casualties the term should

be employed only on the emergency medical tag (M D Form 52 b) and the case rediagnosed with the proper psychiatric term on the field medical record (M D Form 52 c). The use of the term "exhaustion" for psychoneurosis will be confined to cases developing under enemy action. Cases of exhaustion free from psychiatric components and essentially "physical" in nature will be qualified with an appropriate term in addition to the word "exhaustion" for purposes of differentiation.

c Psychiatric casualties fall into the following main groups and should be so labeled:

- (1) *Psychoneuroses*—These comprise the vast majority of neuropsychiatric casualties in the combat zone. They occur either in a normal or an emotionally unstable individual. Underlying domestic difficulties frequently play a role. The types of psychoneuroses encountered are as follows:
  - (a) *Anxiety*—The anxiety type is the most common. The anxiety symptoms show pronounced variations in severity, but certain symptoms are common to all of them. The most striking of these manifestations is the inappropriate reaction to any sudden sound, sudden movement or the sound of motors of any description. When these stimuli occur, the patient immediately concentrates all attention on the sound or, in more severe cases, may immediately run or seek cover of some sort and exhibit all the symptoms of a minor panic state. This reaction cannot be said to be abnormal qualitatively, since it is the normal reaction, to a lesser degree, of all men who have experienced combat conditions, but the quantitative response is clearly exaggerated. With this abnormal response there is usually a variable degree of mental confusion, tachycardia, tremors and if severe vasomotor reactions of the sympathetic type are evident. In addition, they manifest all of the anxiety reactions evident in civil life, namely, night terrors, insomnia, irritability, inability to concentrate, tremor and somatic symptoms of the visceral type.
  - (b) *Hysteria*—The hysterical reactions of paralysis, anesthesia, deafness, blindness and aphonia, so common in the last war, are notable for their rarity. Of the hysterical reactions seen the rhythmic reflex tremors, repetitive dodging and avoiding movement, amnesias and stupor reactions are by far the most common. These manifestations are extremely dramatic in character and in general show a very poor response to therapy in that, when they are resolved anxiety or other hysterical manifestations replace them or they recur under very minor stress. Some of these cases are distinguished from true psychotic reactions with great difficulty. They may show clearcut hallucinatory reactions, thought block, retardation, decidedly childish behavior and little insight.
  - (c) *Psychasthenia, neurasthenia and reactive depression* are seldom seen and when seen do not respond rapidly.
- (2) *Psychoses*—Psychoses rarely occur in normal individuals but may be precipitated in unstable individuals by stress of battle. The clinical pictures do not differ from those seen in the zone of interior. When the manifestations are

bizarre and dramatic, or when hallucinations and delusions are present, detection is not difficult. Psychoses may also be manifested merely by overtalkativeness, overactivity, distractibility, depression, apathy, indifference, carelessness in the care of clothes and eating habits or by undue suspiciousness or complexes on particular subjects, such as the government or religion. Psychoses also occur which appear to be full blown cases of schizophrenia but differ from the true disease by clearing up in a matter of days or weeks.

- (3) **Psychopathic Personality** Psychopathic personalities with homosexuality, emotional instability or asocial and amoral trends are, of course, revealed but not caused by the stress of battle. Individuals with these personality defects are more likely to become psychiatric casualties than are "normal" individuals.
- (4) **Mental Deficiency** Limited intelligence also is revealed rather than caused by combat and may be mistaken for hysterical confusion or stupor.
- (5) **Organic Neurologic Disease** Concussion Due to Blast. An individual may be within a few feet of a bursting shell and suffer no organic damage, whereas another individual many yards from the same burst may be killed outright by the concussion. The individual who has suffered organic damage from blast almost invariably gives a history of clear loss of consciousness, having his breath knocked out, coughing up bloody sputum or bleeding from the ears and nose. On examination he may show fissuring of the skin, flash burn, perforated or hemorrhagic eardrums, conjunctival hemorrhage, signs of intrathoracic or intra-abdominal pathologic changes, focal or general signs of organic damage of the central nervous system.

**Malingering**—A common error is to mistake psychoneurosis for malingering. It is difficult for many to accept the fact that malingering and psychoneurosis are distinct clinical entities. Treatment effective for one is utterly useless and even harmful for the other. Malingering is the conscious, deliberate exaggeration or pretense of an illness for the purpose of escaping duty. Psychoneurosis is an actual illness. By definition, a malingerer lies about his symptoms. A person with psychoneurosis either tells the truth or what he firmly believes is the truth. It may be true that neither wants to return to duty, but the malingerer is aware that he could go back if he chose, whereas a person with psychoneurosis either is actually unable to return to duty or sincerely believes so.

**6 Disposition**—a It is highly important to avoid indiscriminate evacuation. If a case can be treated adequately in forward areas, the prognosis is, as a rule, far better. On the other hand, delay in evacuating cases for which specialized treatment in a base area is necessary may prove disastrous to the patient and harmful to the efficiency and morale of the unit.

b The criterion for selection of cases is the length of time which will be necessary to return a given case to effective duty. In general, the evacuation policy is to retain at the level of the evacuation hospital only those who require five days' treatment or less. All other cases must be treated in hospitals further removed from the front. In a general way, the accompanying table, based on actual field experience, may serve as a guide.

**7 Treatment**—a Treatment of neuropsychiatric cases developing in the combat zone is based on four cardinal principles.

- (1) Early selection of cases which with treatment may be returned promptly to duty.
- (2) Treatment of these cases in the combat zone.
- (3) The rapid initiation of sedation in all cases.
- (4) Recognition that psychiatric casualties are not malingerers needing punishment but sick men needing treatment.

b **Treatment in the Division Area** Battalion or regimental medical officers can return many mild cases to duty in a few hours by means of discussion, reassurances and short rest periods in the unit rest area. Heavy sedation should be initiated when the patient is first seen. This heavy sedation acts to raise the stimulus threshold, decreases the anxiety reaction and

decreases the abnormal suggestibility. The dose given must not be sufficiently high to convert a sitting case into a litter case. The sedation of choice is sodium amytal 6 to 9 grains (0.4 to 0.6 Gm) orally or an equivalent dose of a similar rapidly acting sedative. Phenobarbital 4½ grains (0.3 Gm) may be used, but the slowness of its action is a disadvantage in an acutely excited patient. Intravenous medication is to be avoided in forward areas because it converts a sitting into a litter patient and it is only rarely necessary. Morphine should not be used. If there is delay in the collecting or clearing station (and the patient cannot immediately be returned to duty), further sedation is given to keep him in a drowsy state. Doses of sodium amytal up to 15 grains (1 Gm) or phenobarbital up to 8 grains (0.5 Gm) in twenty-four hours may be given with safety.

c **Treatment at the Evacuation Hospital** Immediately on arrival, a rapid examination of the patient is made in order to classify him either for further evacuation on criteria previously discussed or retention in the hospital for treatment. Those retained should be sent to a separate neuropsychiatric ward, allowed to wash, have the ward rules explained to them and a more exhaustive history and physical examination given. On the basis of this more complete examination, those men with

#### Evacuation Policy for Psychiatric Cases

Retain	Evacuate Immediately	Doubtful
1 All psychoneuroses of the anxiety type except the most severe	1 All psychoses 2 All organic neurologic disorders 3 All psychiatric repeaters 4 Psychoneuroses with visceral somatic symptoms	1 Moderately severe psychoneuroses of hysteria type 2 Minimal concussion due to blast 3 Mild psychopaths of criminal and aggressive types
2 Mild psychoneuroses of the hysteria type	5 All severe mental defectives 6 All severe psychoneuroses of the hysteria type (stupors, amnesias, reflex tremors and tics) 7 Severe psychoneuroses of the anxiety type 8 Severe and moderate reactive depressions and psychasthenias 9 Definite psychopathic personality 10 Most cases of concussion due to blast 11 Severe mental defectives	4 Moderate mental defectives 5 Mild reactive depressions

profound disturbances are evacuated the following day. Those remaining, whose prognosis seems good, are given explanations for their symptoms, strong reassurance and suggestions and are then sent to bed for two or three days. While in the ward they are given phenobarbital routinely and additional sodium amytal, if necessary, so that most of their time is spent sleeping. All patients are required to be up for each meal, which they get by standing in line with the up-patients, and to keep their own bed and immediate ward area in order. These steps are taken deliberately to maintain a sense of discipline and to discharge any idea of serious or physical illness. All therapeutic discussion is carried out in the open ward with the idea of repetitive mass treatment effect. Intravenous barbiturate catharsis and suggestions may be used in selected cases. Sedation is discontinued for a full day before discharge, and during this time the decision is made whether to return the patient for further duty or to evacuate him to the communication zone. This decision is based on numerous factors, but response to the direct questions "How do you feel now?" and "Do you want to return to your unit for duty?" are very often the deciding factors. There is no use in returning a man who boldly states that he is certain that he will have further trouble. Little attention is paid to new or minor symptoms, except to minimize them and give strong reassurance. No case should be kept in the evacuation hospital over five days.

For the Surgeon General

ROBERT J. CARPENTER,  
Lieutenant Colonel, Medical Corps  
Executive Officer

## BOLLING FIELD BASE HOSPITAL

Until a few years ago Bolling Field, D C, was served by a small dispensary station and was otherwise dependent on Walter Reed General Hospital for cases requiring hospitalization. Col James F Brooke, base surgeon and senior flight surgeon, who arrived at Bolling Field about five years ago and who is at present in command of the base hospital, deserves credit for his efforts which made possible the building of the new hospital. When the hospital was opened in May 1941 the main barracks, which had formerly housed the dispensary, was turned into the flight surgeon's office, where Lieut. Col Bernard L Jarman, chief of the flight surgeon's section, is now in charge. Among others on the hospital staff at present are Capt. Floyd Fortuin, psychiatrist, Capt. Spenser C Flo, who is in charge of the surgical section, Capt. Floyd K. Hurt, x-ray specialist, who directs this department at the hospital, and Major Timothy F Moran, chief of the eye, ear, nose and throat section.

## ARMY SURGEON CITED BY NAVY

Capt. Beverly D Hairfield, M C, U S Army, formerly of Charlottesville, Va., received a special citation from the Navy for his work during the Sicilian invasion, having been detached from the evacuation hospital when he volunteered for the assignment. Dr Hairfield graduated from Vanderbilt University School of Medicine, Nashville, in 1939. He entered the service July 1, 1942, when he was commissioned a first lieu-

tenant, and was recently promoted to captain. Regularly assigned to an evacuation hospital which has been in North Africa, Dr Hairfield has been in the surgical division. He landed in Casablanca in the invasion of North Africa and moved close behind the advancing lines to Bizerte and Tunis.

## FLIGHT SURGEONS' ASSISTANTS

A class of ninety-six flight surgeons' assistants completed the course in aviation medicine at the School of Aviation Medicine, Randolph Field, Texas, October 9. Brig Gen Eugen G Reinartz, U S Army, is commandant of the school.

## ARMY PERSONALS

A letter from Capt. Charles H Fleck, dated September 23, was recently received by the public safety director of Altoona, Pa., in which was enclosed a Jap souvenir, presumably a chart for temperature and pulse readings, 15 by 12 inches in size and of exceedingly fine, white paper, evidently made of rice. Dr Fleck also stated that when his contingent took possession of an island after the Japs had fled they found that the enemy had left behind most of their possessions except their arms. They had dug caves and tunnels, and their medical and other stores were found intact by the allied soldiers. Dr Fleck is in the medical corps and in service in General Douglas MacArthur's army in the south Pacific. He graduated from George Washington University School of Medicine, Washington, D C, in 1932 and entered the service early in 1943.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS,  
DENTISTS AND VETERINARIANSHOSPITALS NEEDING INTERNS  
AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their Procurement and Assignment Service quotas for Jan. 1, 1944:

1 Prospective interns who have not yet obtained a hospital appointment should communicate with these institutions either directly or through the office of the dean of their medical school. Assistant residents and residents should direct their applications to the hospital superintendent in the usual manner.

2 Institutions having a shortage of interns or residents are again invited to make their needs known to the Council on Medical Education and Hospitals. In reporting shortages, hospitals should indicate the number of interns, assistant residents and residents needed to complete their quotas for Jan. 1 1944.

Hospitals Reporting Vacancies for  
Interns or Residents

## ALABAMA

St Vincent's Hospital Birmingham Capacity 131 admissions 3,687  
Sister Mariana R N Superintendent (mixed resident)  
St Margaret's Hospital Montgomery Capacity, 168 admissions,  
4,990 Sister Roberta Degnan R N administrator (mixed res)

## ARKANSAS

Leon N Levi Memorial Hospital Hot Springs Capacity 75 admissions 845  
Regina H Kaplan, Administrator (mixed resident)

## CALIFORNIA

Cecilia Eye Hospital San Francisco Capacity 35 admissions 1,063  
Miss Marian I Hamilton Superintendent (resident ophthalmologist)  
Mt. Zion Hospital San Francisco Capacity 189 admissions 4,866  
Dr J A Katzev Medical Director (intern)  
Shriners Hospital for Crippled Children San Francisco Capacity 60  
admissions 216 Mrs Gertrude R Folendorf R N Superintendent  
(resident orthopedist)

## CONNECTICUT

Bridgeport Hospital Bridgeport Capacity 416 admissions 10,744  
Mr Oliver H Bartine Superintendent (intern)  
New Britain General Hospital New Britain Capacity 265 admissions  
6,826 Dr H Weston Benjamin Managing Director (int & res)  
Hospital of St Raphael New Haven Conn Capacity 280 admissions  
7,145 Sister Rose Alexis Superintendent (intern)

The Stamford Hospital, Stamford Capacity 324, admissions, 6,352  
Dr Charles H Young Superintendent (intern and resident)  
Waterbury Hospital Waterbury Capacity 369 admissions 7,765  
Aida E Creer R N, Superintendent (intern)

## DELAWARE

St. Francis Hospital Wilmington Capacity 137 admissions, 1,874  
Sr M. Illuminata, Superintendent (intern)

## GEORGIA

The Crawford W Long Memorial Hospital Atlanta. Capacity, 269  
admissions 8,662 Dr L C Fischer Administrator (int & res)  
Grady Memorial Hospital Atlanta. Capacity 721 admissions 15,557  
residents)  
The Piedmont Hospital Atlanta. Capacity 147 admissions 4,276  
Mr George R Burt, Superintendent (interns)  
Saint Joseph's Infirmary Atlanta. Capacity 158, admissions 4,841  
Sister Cornile Superintendent (intern)

## ILLINOIS

Henrotin Hospital Chicago Capacity 129 admissions 3,139 Veronica  
Miller Superintendent (intern and resident)  
Loretto Hospital Chicago Capacity 159 admissions 4,235 Sr M  
Stephanie R N, Superintendent (intern)  
Women and Children's Hospital Chicago Capacity 125 admissions,  
2,697 Mrs. Edna H Nelson Superintendent (intern women)  
Pleasant View Sanatorium East St. Louis Capacity 98 admissions  
178 Dr Robinson Bosworth, Superintendent (resident tuberculosis)  
The Little Company of Mary Hospital Evergreen Park. Capacity  
281 admissions 8,189 Mother M Dunstan Superintendent (intern  
and resident obstetrician)  
The Methodist Hospital of Central Ill Peoria Capacity, 240 admis  
sions 6,240 Dr C S Woods Superintendent (intern)

## INDIANA

St Catherine Hospital East Chicago Capacity 344 admissions 9,043  
Sister M Cordula Superintendent (intern)  
The Methodist Hospital Gary Capacity 140 admissions 5,943  
Rev James Lawson Superintendent (intern)  
St Margaret Hospital Hammond. Capacity, 281 admissions 8,035  
Sr M Vincenziana Superintendent (intern)

## IOWA

St Luke's Methodist Hospital Cedar Rapids Capacity 175 admis  
sions 5,707 Karl P Meister Superintendent (mixed resident)

## KANSAS

Bethany Hospital Kansas City Capacity 180 admissions 4,793  
Ethel L Hastings R N Superintendent (mixed resident)  
Providence Hospital, Kansas City Capacity 110 admissions 2,773  
Sister Mary George R N Superintendent (intern)  
The Wichita Hospital Wichita Capacity 145 admissions 4,777  
Sister M Agnes Superintendent (intern)

## KENTUCKY

St Elizabeth Hospital, Covington Capacity, 335, admissions, 5,730  
Sister Mary Alocoque, Administrator (intern)  
Jewish Hospital, Louisville Capacity, 90, admissions, 2,587 Mr  
Walter J Bailey, Superintendent (resident, mixed)

## LOUISIANA

North Louisiana Sanitarium, Shreveport Capacity, 114, admissions,  
3,694 Mrs Jessie W Sanford, RN, Superintendent (intern)  
Tri State Hospital, Shreveport Capacity, 140, admissions, 4,634 Mrs  
Louise G Fry, RN, Superintendent (intern)

## MARYLAND

St Agnes' Hospital, Baltimore Capacity, 248, admissions, 4,994  
Sister Rosanna, RN, Administrator (intern)

## MASSACHUSETTS

Brockton Hospital, Brockton Capacity, 155, admissions, 2,872 Dr  
F M Hollister, Superintendent (intern)  
Cambridge City Hospital, Cambridge Capacity, 400 admissions, 6,632  
Gertrude D Striplin, RN, Superintendent (intern)  
Union Hospital, Fall River Capacity, 186, admissions, 3,725 Miss  
Jennie F Smithies, RN, Superintendent (intern)  
Holyoke Hospital, Holyoke Capacity, 155, admissions, 2,918 Mr  
S I Barnes, Superintendent (intern)  
Lynn Hospital, Lynn Capacity, 232, admissions, 6,473 Mr Dan  
Truider, Administrator (intern)  
St Luke's Hospital, Pittsfield Capacity, 200, admissions, 3,531  
Sister M Louise, RN, Superintendent (intern)  
The Waltham Hospital, Waltham Capacity, 215, admissions, 3,172  
Mr Walter R Amesbury, Administrator (intern)  
Worcester Hahnemann Hospital, Worcester Capacity, 150, admissions,  
3,158 Erna M Kuhn RN, Superintendent (intern)  
Saint Vincent Hospital, Worcester Capacity, 313, admissions, 5,934  
Sister M Loreto, Superintendent (intern and resident)

## MICHIGAN

The Grace Hospital, Detroit Capacity, 555, admissions, 16,677 Dr  
Edmund F Collins, Medical Director (intern)  
Mount Carmel Mercy Hospital, Detroit Capacity, 550 admissions,  
20,078 Sister M Nicholas, Superintendent (intern and resident)  
Blodgett Memorial Hospital, Grand Rapids Capacity, 170, admissions,  
4,553 Mr William W Colton, Director (intern)

## MISSOURI

St Mary's Hospital, Kansas City Capacity, 182, admissions, 5,103  
Sister Mary Athanasia, Superintendent (intern)  
Christian Hospital, St Louis Capacity, 145, admissions, 2,760 Agnes  
Heman, RN, Superintendent (resident)

## NEBRASKA

Lincoln General Hospital, Lincoln Capacity, 203, admissions, 4,262  
Mr Herbert F Hammond, Administrator (intern)  
St Elizabeth Hospital, Lincoln Capacity, 200, admissions, 5,252  
Ven Sr M Asella, RN, Superintendent (intern)

## NEW JERSEY

Elizabeth General Hospital, Elizabeth Capacity, 250, admissions, 5,523  
Mr W Malcolm MacLeod, Superintendent (intern)  
Englewood Hospital, Englewood Capacity, 238, admissions, 4,893  
Victoria Smith, Superintendent (intern)  
St Francis Hospital, Jersey City Capacity, 228, admissions, 4,370  
Sister Christiana, Superintendent (intern)  
Monmouth Memorial Hospital, Long Branch Capacity, 254, admissions,  
6,020 Mr O N Auer, Director (intern)  
Newark Beth Israel Hospital, Newark Capacity, 463, admissions,  
12,159 Mr I E Behrman, Director (intern)

## NEW YORK

Memorial Hospital, Albany Capacity, 146, admissions, 3,485 Ellen  
P Young, RN, Superintendent (intern and resident)  
St Peter's Hospital, Albany Capacity, 159, admissions, 4,000 Sister  
Mary Esther, Superintendent (intern)  
Brooklyn Eye and Ear Hospital, Brooklyn Capacity, 143, admissions,  
7,279 Mr Henry J Williams, Superintendent (resident otologist)  
Wyckoff Heights Hospital of Brooklyn, Brooklyn Capacity, 199, admis-  
sions, 4,337 Louis Schenkweiler, Superintendent (intern)  
Charles S Wilson Memorial Hospital, Johnson City Capacity, 350,  
admissions, 6,074 Mr Robert L Eekelberger, Administrator (intern)  
Metropolitan Hospital, Welfare Island, New York Capacity, 1,111,  
admissions, 10,899 Dr Alexander W Kruger, Med Supt (int)  
St Clare's Hospital, New York Capacity, 405, admissions, 7,603  
Mother Mary Alice, RN, Superintendent (intern)  
Triboro Hospital, Jamaica, Long Island Capacity, 557, admissions,  
1,112 Dr Henry I Fineberg, Medical Supt. (res thc)  
United Hospital, Port Chester Capacity, 214, admissions, 5,089 Mr  
Carl P Wright Jr, Superintendent (intern)  
St Mary's Hospital, Rochester Capacity, 257 admissions, 9,785  
Sister Martina, Superintendent (intern and resident)  
Crouse-Irving Hospital, Syracuse Capacity, 240 admissions, 6,450  
Dr Carl E Muench, Superintendent (intern)

## NORTH CAROLINA

Charlotte Memorial Hospital Capacity, 325, capacity, 6,706 Mr  
Carl I Flath, Administrator (intern)  
Highsmith Hospital, Fayetteville Capacity, 132, admissions, 4,236  
Dr W T Rainey, Medical Director (resident mixed)

## OHIO

Aultman Hospital, Canton Capacity, 214, admissions, 5,744 Mr  
James W Stephan, Director (intern)  
St Mary's Hospital, Cincinnati Capacity, 230, admissions, 5,114  
Sister Theonilla, Superintendent (intern and resident)  
Lutheran Hospital, Cleveland Capacity, 137, admissions, 4,121 Mr  
Lee S Lanpher, Superintendent (intern)  
St Alexis Hospital, Cleveland Capacity, 220, admissions, 7,673  
Sister M Flaviana, RN, Superintendent (intern)  
Mercy Hospital, Hamilton Capacity, 230, admissions, 4,754 Sister  
Mary Benignus, Superintendent (resident mixed)  
Lucas County General Hospital, Toledo Capacity, 325, admissions,  
3,215 Roland E Gregg, Superintendent (intern)  
Mercy Hospital, Toledo Capacity, 353, admissions, 8,240 Sister  
Mary Aquin, Superintendent (intern)  
The Toledo Hospital, Toledo Capacity, 325, admissions, 7,236 Wilson  
L Benfer, Superintendent (intern)

## PENNSYLVANIA

Fitzgerald Mercy Hospital, Darby Capacity, 251, admissions, 5,577  
Dr C T McCarthy, Medical Director (intern)  
Easton Hospital, Easton Capacity, 220, admissions, 5,178 S Chester  
Fazio, Superintendent (intern and resident)  
Harrisburg Hospital, Harrisburg Capacity, 264, admissions, 6,540  
W S Kohlbaas, Superintendent (intern)  
Harrisburg Polyclinic Hospital, Harrisburg Capacity, 195, admissions,  
4,370 Mr Paul H Stauffer, Manager (intern)  
Saint Joseph's Hospital, Lancaster Capacity, 265, admissions, 4,972  
Sister M Philiberta, Superintendent (intern)  
McKeesport Hospital, McKeesport Capacity, 325, admissions, 6,313  
William A Hacker, Superintendent (intern)  
The Babies' Hospital of Philadelphia, Philadelphia Capacity 15,  
admissions, 311 Laura E McClure, Medical Director (resident  
pediatrician)  
Northeastern Hospital of Philadelphia, Philadelphia Capacity 102,  
admissions, 2,921 A H Brittingham, Superintendent (intern)  
Saint Mary's Hospital, Philadelphia Capacity, 250, admissions,  
4,541 Sister Mary Gertrude, Superintendent (intern)  
St Margaret Memorial Hospital, Pittsburgh Capacity, 150, admis-  
sions, 2,886 Adele M Polk, RN, Superintendent (intern)  
Community General Hospital, Reading Capacity, 134, admissions,  
2,637 Olin L Evans, Superintendent (intern)  
The Hahnemann Hospital, Scranton Capacity, 125 admissions, 2,632  
L R Robbins, Superintendent (intern)  
Mercy Hospital, Wilkes Barre Capacity 220 admissions, 4,586  
Sister Mary Avellino RN, Superintendent (intern)

## RHODE ISLAND

St Joseph's Hospital, Providence Capacity, 360, admissions, 7,883  
Mother M Evangelist (intern)

## SOUTH CAROLINA

Greenville General Hospital, Greenville Capacity, 315, admissions,  
7,007 J B Norman, Superintendent (intern)

## TENNESSEE

St Thomas Hospital, Nashville Capacity, 211, admissions, 6,699  
Sister Lydia, Superintendent (intern)

## TEXAS

Methodist Hospital of Dallas Capacity, 206, admissions 5,545  
E B Germany, Chairman, Administration Committee (intern)  
Medical and Surgical Memorial Hospital, San Antonio Capacity,  
157, admissions, 5,440 Mrs Alfreda P Hassell, RN, Super-  
intendent (intern)  
King's Daughters Hospital, Temple Capacity, 124, admissions, 2,711  
Ruby B Gilbert Superintendent (intern)

## UTAH

Thomas D Dee Memorial Hospital, Ogden Capacity, 260, admissions,  
6,965 Lawrence H Evans, Superintendent (intern)

## VIRGINIA

The Chesapeake and Ohio Hospital, Clifton Forge Capacity, 146,  
admissions, 4,000 Miss Louise M Reynolds, RN, Superintendent  
(intern and resident surgery)  
Elizabeth Buxton Hospital, Newport News Capacity, 149 admissions  
4,375 Dr Russell Buxton, Superintendent (mixed residents)

## WASHINGTON

Pierce County Hospital, Tacoma Capacity, 239, admissions, 2,776  
Dr Burton A Brown, Administrator (intern)

## WEST VIRGINIA

St Francis Hospital, Charleston Capacity, 118, admissions 3,602  
Sister M Consilia, Administrator (mixed residents)  
The Camden Clark Hospital, Parkersburg Capacity, 183 admissions  
3,533 Mrs Grace M Short, RN, Superintendent (intern)

## WISCONSIN

St Francis Hospital, La Crosse Capacity, 292 admissions, 5,518  
Sister M Fridoline, RN, Superintendent (intern)  
Milwaukee County Hospital, Milwaukee Capacity, 1,075, admissions  
12,092 H W Sargeant, Superintendent (intern)  
Mercy Hospital, Oshkosh Capacity, 224 admissions 4,783 Sister  
M Laurentina, Superintendent (intern)  
St Mary's Hospital, Racine Capacity 271 admissions 5,396 Sister  
M Bonaventure, Superintendent (intern)

## MISCELLANEOUS

### HOUSE COMMITTEE DENIES FUNDS FOR RELOCATED PHYSICIANS

Attention was directed in THE JOURNAL, October 16, to the fact that supplemental estimates had been submitted by the President to the Congress for additional funds to enable the United States Public Health Service, either through its own personnel or by the payment of monthly stipends to civilian physicians, to provide medical services in certain critical areas. The House Committee on Appropriations has now reported to the House the First Supplemental National Defense Appropriation Bill for the fiscal year ending June 30, 1944, H R 3598, and has failed to include therein the additional appropriation requested. In explanation of its failure to provide the additional sums, the committee in its report said:

'The budget request contains an item of \$1,000,000 for emergency medical care to provide doctors for areas, principally war industry areas where the number of civilian physicians and dentists is inadequate for normal medical attention of the population. The amount contemplated \$573,000 for salaries and travel of 300 commissioned officers of the Public Health Service for such assignments and \$375,000 for three months' pay (\$750 each) and travel expenses (\$500 each) for the relocation of 300 private physicians. The committee has not approved this request.

'Undoubtedly a critical situation exists in many areas due to the recruitment for the armed forces of approximately 50,000 doctors. The committee is advised that there are approximately 185,000 doctors in the United States counting those up to 101 years of age. Of these the armed forces have taken 50,000, leaving 135,000 doctors in the country available for the civilian population. An estimate made to the committee by a prominent medical authority indicates that some 40,000 to 50,000 of the 135,000 are ineffective practitioners, leaving approximately 85,000 to 95,000 effective physicians to do the work formerly done by the larger number. The Public Health Service advises that there are in the United States at this time some 213 communities that need physicians and dentists with a minimum need of 295 physicians and 53 dentists. This list is printed commencing on page 979 of the hearings. The survey of need throughout the United States is still incomplete. Surgeon General Parran has advised that in his opinion the situation in many areas is acute.

The committee in rejecting the budget request does not minimize the need or the seriousness of the situations which exist. It does hesitate to inaugurate a program of this character with federal funds to provide direct medical attention to the civilian population with physicians paid by the federal government. The committee has the opinion that out of the cooperative efforts of the federal government the medical associations the state departments of health and the communities themselves there will and should come a concerted and spontaneous effort to provide this need. Most of it is in war industry areas and it is inconceivable that such communities working with the industries the affected population and state and local authority cannot inaugurate and maintain an adequate public spirited program, financially sound to serve this need. If the affected areas cannot and will not solve their local needs it may be necessary for the federal government in the interest of the general public health to step in but until then the committee feels that federal funds should be withheld under the contemplated procedure."

### WARTIME GRADUATE MEDICAL MEETINGS

A Wartime Graduate Medical Meeting was held Friday October 29 at the O'Reilly General Hospital in Springfield Mo for the medical officers of O'Reilly Fort Leonard Wood Camp Crowder and the civilian doctors of the Eighth Councilor District of the Missouri State Medical Association. The program included the following papers: Penicillin Therapy Major Edward P. Burch, Present Day Status of the Sulfonamides Dr. Paul Hageman, Tropical Diseases and Malaria, Dr. Russell Blittner, Trauma of the Abdomen, Dr. L. P. Engel, Reconstructive Surgery of War Wounds, Major William S. Kiskade-

den, Psychiatric Problems in General Hospitals, Capt Clarence M. Schrier, Low Back Pain and Disability Orthopedic Point of View, Dr. Frank D. Dickson and Capt William H. Meade.

The attendance was 300, about equally divided between medical officers and civilian doctors. Among the civilian group were men from all parts of the state, with councilors and officers of the state association well represented.

### GERMAN DRUGS AND PHARMACEUTICALS SEIZED

According to the Office of War Information, Alien Property Custodian Leo T. Crowley announced on October 21 the seizure by his agents at San Juan, Puerto Rico, of twenty-five cases of German drugs and pharmaceuticals estimated to have a sales value of more than \$100,000. The seized medicinal products, which originated in La Quimica Bayer, S. A., of Buenos Aires, Argentina, a wholly owned subsidiary of I. G. Farbenindustrie of Germany, were consigned to the German Bayer subsidiary in Venezuela. The seizure of this cargo is a major blow at the German Bayer organization in Venezuela, which has not received a shipment since October 1942 and which consequently is almost without supplies. The merchandise in the seized cargo is in sufficient volume to have carried their business for almost a year. The financial loss to the Bayer subsidiary in Argentina as a result of the seizure is also considerable. Assurances have been given to the Venezuelan government that the seizure will not be allowed to jeopardize the public health in that country.

### MEDICAL AND SURGICAL RELIEF COMMITTEE OF AMERICA

The Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York City, presented medical and surgical equipment to set up a battle dressing station on the cruiser the U. S. S. *Boston* to Rear Admiral Luther Sheldon Jr. (MC), U. S. N., who accepted the donation in the name of the Secretary of the Navy, Frank Knox. The equipment consisted of an emergency medical field set, an operating kit and supplemental instruments.

More than \$1,000 worth of surgical equipment was also donated by the Medical and Surgical Relief Committee to the French Red Cross in Algiers, North Africa, to help rehabilitate wounded French soldiers and to relieve the shortage of critical medical supplies. This donation makes a total of more than \$8,000 worth of medical and surgical equipment sent by the committee to North Africa during the past five months.

### PUBLIC HEALTH UNDER HITLER

According to the *Frankfurter Zeitung* of August 21 a report from Berlin says that over 5,500 factories today are cared for by works doctors. The question has been repeatedly raised whether the workers of these factories are under an obligation to let themselves be examined by the works doctor on demand in the case of inability to work. According to the present conception of law this obligation exists only if it is explicitly laid down in the wages and factory regulations or in individual labor contracts. A general obligation to submit to an examination by the works doctor did not exist until now. The Office for Social Self Responsibility of the DAF has expressed its opinion that this conception can no longer be maintained. The employer is responsible for the orderly working effort of his workers. Therefore he must be able if necessary to let the works doctor establish whether the worker is capable for work or not. The worker's duty of loyalty therefore demands that he submit to examination by the works doctor.

Iolva Plodiv, of July 9 states that in autumn the chief public health directorate will open a hospital in Sofia for children suffering from infantile paralysis. Children whose parents cannot look after them properly will be treated there.



# ORGANIZATION SECTION

## OFFICIAL NOTES

### ANNUAL CONFERENCE OF SECRETARIES AND EDITORS

The Annual Conference of Secretaries and Editors of Constituent State Medical Associations will be held at the offices of the Association in Chicago on November 19 and 20. The program will be as follows:

FRIDAY, NOVEMBER 19, 10 A M

Call to Order Roger I. Lee, Chairman of the Board of Trustees of the American Medical Association

Address James E. Paullin, President of the American Medical Association

Problems Relating to Assignment of Duties of Military Surgeons George F. Lull, Deputy Surgeon General, United States Army

Hospital Training of Medical Graduates Victor Johnson, Secretary, Council on Medical Education and Hospitals of the American Medical Association

12:30 p m LUNCHEON at the Kungsholm, corner of Ontario and Rush streets

FRIDAY, NOVEMBER 19, 2 P M

Address Herman L. Kretschmer, President Elect of the American Medical Association

Cooperative Relationship of Procurement and Assignment Service and State Medical Associations Harold S. Dichtl, member, Directing Board, Procurement and Assignment Service for Physicians, Dentists and Veterinarians

War Participation Committee as a Coordinating Agency Walter Donaldson, chairman, War Participation Committee of the American Medical Association

The Work of the Council on Medical Service and Public Relations Louis H. Bauer, chairman, Council on Medical Service and Public Relations of the American Medical Association

FRIDAY, NOVEMBER 19, 6:30 P M

DINNER MEETING OF EDITORS OF STATE MEDICAL JOURNALS  
PALMER HOUSE, CRYSTAL ROOM

Wingate M. Johnson, editor of the North Carolina Medical Journal, presiding

The Council on Pharmacy and Chemistry Austin E. Smith, Secretary,  
Council on Pharmacy and Chemistry of the American Medical Association  
The Cooperative Medical Advertising Bureau Open discussion

SATURDAY, NOVEMBER 20, 9:30 A M

Medical Legislation in Congress J. W. Holloway Jr., director, Bureau of Legal Medicine and Legislation of the American Medical Association  
Obstetric and Pediatric Care for the Wives and Children of Service Men L. Fernald Foster, secretary of the Michigan State Medical Society

### ELECTRICAL TRANSCRIPTIONS IN HEAVY DEMAND

Electrical transcriptions for radio broadcasting for local medical societies prepared by the Bureau of Health Education in two series, *American Medicine Serves the World at War* and *Before the Doctor Comes*, became available September 1.

The entire supply available is now in use. An advance schedule is being maintained. Medical societies and auxiliaries desiring the use of transcriptions should file applications for advance dates with the Bureau of Health Education.

The series *Before the Doctor Comes* consists of sixteen broadcasts in interview form giving advice to the mother as to what to do and what not to do under certain circumstances "before the doctor comes." The series *American Medicine Serves the World at War* began with six interviews dealing with wartime problems and how they are being solved in various localities. Two additional broadcasts will soon be added to the series, which will be augmented from time to time as opportunity arises.

The Bureau of Health Education is beginning preparations for a third series of transcriptions entitled *Contagious Diseases in the Home*. This series should be ready approximately Feb. 15, 1944.

## MEDICAL LEGISLATION

### MEDICAL BILLS IN CONGRESS

*Change in Status*—H. R. 3598 has passed the House, making appropriations to supply deficiencies in certain appropriations for the fiscal year ending June 30, 1944 and to provide supplemental appropriations. As reported to and passed by the House, this bill fails to appropriate the amount requested by the President for emergency medical care to provide doctors and dentists for areas where the number of civilian physicians and dentists is inadequate for normal medical and dental attention of the population. The bill does include a supplemental appropriation of \$7,500,000 for the training of nurses and an appropriation of \$10,356,000 to provide additional hospital and domiciliary facilities for veterans. The committee report indicates that this amount will be expended to provide facilities for neuropsychiatric patients.

*Bills Introduced*—H. Con. Res. 51, submitted by Representative Schiffer, West Virginia, proposes to request the Social Security Board to create a special advisory council to investi-

gate the extension of the federal old age and survivors insurance system to include persons in the armed forces, and also the extension of unemployment allowances after termination of military service. H. R. 3603, introduced by Representative Summers, Texas, proposes to regulate the commitment of insane persons to veterans' and other United States institutions. H. R. 3610, introduced by Representative Rowan, Illinois, provides for a program of research in universities, colleges and other institutions of higher learning, for the prevention of the pollution of the waters of the United States and to establish a Water Pollution Control and Sewage Utilization Board, to be composed of the Secretary of Agriculture, the Surgeon General of the Public Health Service and one other person to be appointed jointly by the Secretary of Agriculture and the Surgeon General. H. R. 3623, introduced by Representative Rogers, Massachusetts, proposes to establish a permanent medical service in the Veterans Administration which will constitute a component part of the military forces of the United States.

## WOMAN'S AUXILIARY

### Kansas

The Wyandotte County Medical Auxiliary recently held a dessert luncheon and book review, at which time they reported fifteen new members.

The Sedgwick County auxiliary decided to hold only three meetings during the year. Mrs. James Hibbard, Wichita, is the new president.

At a meeting of the Kansas auxiliary recently the following officers were elected:

Mrs. E. E. Tippin, Wichita, president; Mrs. Leo J. Schaefer, Salina, president-elect; Mrs. C. D. Blake, Hayes, first vice president; Mrs. M. A. Brawley, Frankfort, second vice president; Mrs. H. L. Regier, Kansas City, secretary; and Mrs. E. N. Robertson, Concordia, treasurer.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### ARKANSAS

**Dr Pelouze to Lecture on Gonorrhea**—Dr Percy S Pelouze, associate professor of urology University of Pennsylvania School of Medicine, Philadelphia and special consultant for the gonorrhea control program of the U S Public Health Service, will address county and district medical societies in Arkansas, March 13-24, under the auspices of the public health service

**District Meetings**—The Fifth Councilor District Medical Society was addressed in Camden, October 7, by Drs Henry King Wade, Hot Springs National Park, on "Cancer of the Prostate" Joseph F Shuffield, Little Rock, "Fractures of the Hip", Byron L Robinson, Little Rock, "Medical Education," and William R. Brooksher, Fort Smith "The Wagner-Murray Bill"—The First Councilor District Medical Society of Northeast Arkansas held its eighty-second semiannual meeting in Jonesboro October 21, with the following speakers Capt. Louis J Benton, M C, A U S on "Some Uses and Disuses of the Sulfonamides", Lieut Harry Cohen, M C, A U S, "Practical Consideration in Treatment of Early Syphilis" Dr Pearl W Lutterloh, Jonesboro, "Highlights of the Wagner Bill," and Dr Robert H Willett, Jonesboro, "Relative Value of Deep X-Ray Therapy in Lobar Pneumonia"

### CALIFORNIA

**Dr Wagner Placed in Charge of Tuberculosis Control**—Dr William F Wagner, resident physician at Olive View Sanatorium, Olive View has been appointed chief of the division of tuberculosis control in the San Francisco city and county department of health.

**Medical Missionary Repatriated**—Dr Ralph C. Lewis, Shunteh, Hopeh, China, medical missionary to China, is expected to be among the exchange prisoners aboard the *Grips-holm* newspapers recently reported. Dr Lewis was with the American Presbyterian Mission, Hugh O'Neill and Grace Talcott Memorial Hospital, Shunteh

**Vesalius Celebration**—The California Academy of Sciences met on October 6 at the University of California Medical School, San Francisco to observe the 400th anniversary of the publication by Vesalius of "De Humani Corporis Fabrica" The principal address was delivered by Dr John B De C M Saunders, chairman of the department of anatomy, on "Andreas Vesalius, the Anatomist"

**Latin American Gives Herzstein Lectures**—Dr Oscar Ivanissevich, professor of surgery and director of the Surgical Institute of the University of Buenos Aires will deliver the Morris Herzstein Medical Lectures for 1943 in San Francisco in November under the auspices of the medical schools of Stanford University and the University of California. Dr Ivanissevich, who is serving as exchange professor of surgery at Stanford University School of Medicine during October and November, will speak November 15 on "General Consideration of Echinococcosis" November 17 on "Echinococcosis of the Liver" and November 19 on "Echinococcosis of the Lung"

### COLORADO

**State Medical Election**—Dr Edward R Mugrage, Denver, was chosen president-elect of the Colorado State Medical Society at the recent annual meeting of the house of delegates in September and Dr George P Lingnelfter Denver, was installed as president Dr George M Myers Pueblo was chosen vice president Dr John S Bouslog Denver, is secretary

**The Friedman Lectures**—Dr Walter S Maclay medical officer in charge of the Mill Hill Emergency Hospital London England delivered the Friedman Lectures on November 2 and 3 under the auspices of the National Jewish Hospital, Denver in cooperation with the Medical Society of the City and County of Denver and the University of Colorado School of Medicine Denver The first lecture was entitled "Newer Developments in the Neuroses—Their Significance in General Medicine" and a second, in the form of a conference, conducted by Drs Maclay,

Bradford J Murphy and Charles A Rymer, Denver, on "Psychosomatic Problems" Dr Maclay is touring the United States under the auspices of the American Psychiatric Association

### ILLINOIS

**Dr Earle Returns from Latin America**—Dr Walter C Earle, who has been supervising a federally financed health and sanitation program in Latin America, principally on malaria, has returned as director of the Champaign-Urbana Public Health District During his absence his work was carried on by Dr Raymond V Brokaw, Springfield, director of the division of cancer control of the state department of public health

**Physician Repatriated**—Dr Albert M Dunlap, native of Savoy, who had practiced medicine in China since 1910 is being repatriated He is expected to arrive aboard the *Grips-holm* in New York about December 2 Dr Dunlap graduated at Harvard Medical School, Boston, in 1910, going to China the same year Four years later Dr Dunlap joined the Peiping Union Medical College, Peking, serving as professor of otolaryngology and from 1926 to 1928 as dean of the college

**Dr Watson Named Chief Medical Officer**—Dr James Watson, director of the division of mental hygiene, North Carolina State Board of Charities and Public Welfare, Raleigh, has been appointed chief medical officer in the Illinois State Department of Public Welfare to succeed Dr Conrad S Sommer who recently became deputy director of the mental hygiene service in the department of public welfare (THE JOURNAL, October 23, p 495) Dr Watson, in his position as chief medical officer, will be responsible for the medical care and treatment of patients in state hospitals His new appointment will be effective December 1

### Chicago

**Meeting on Tropical Diseases**—A joint meeting of the Chicago Medical Society and Aux Plaines Branch, November 17, will be devoted to a consideration of tropical diseases Lieut John E Choisser (MC), U S Naval Reserve, will speak on "Filaria" and Lieut Philip A Arling (MC), U S Naval Reserve, "Malaria"

**The Bacon Lectures**—Dr Louis E Phaneuf, professor of gynecology Tufts College Medical School, Boston, will deliver the Charles Sumner Bacon Lectures for 1943-1944 at the University of Illinois College of Medicine December 1-2 Dr Phaneuf's subjects will be "Some Notes on the Life of J Marion Sims, and on the History of Vesico-Vaginal Fistula" and "The Management of Complete Lacerations of the Perineum and Recto-Vaginal Fistula"

**Course in Electrocardiographic Interpretation**—A course in electrocardiographic interpretation for graduate physicians will be given at Michael Reese Hospital by Dr Louis N Katz, director of cardiovascular research The class will meet each week starting Thursday February 17 for twelve weeks from 7 to 9 p m Further information and a copy of the program may be obtained on application to the Cardiovascular Department Michael Reese Hospital

**Meeting of Bacteriologists**—The fall meeting of the Society of Illinois Bacteriologists will be held in the Chicago Illinois Union November 19 The speakers will be John C. Sylvester Ph D, North Chicago, Ill on "Penicillin Production and Clinical Value", Albert Milzer, Ph D, and Drs Philip Lewin and Sidney O Levinson, co-authors, "The Effect of Fatigue, Chilling and Trauma on Resistance to Experimental Poliomyelitis," and Dr Henry M Lemon, Henry Wise, M S and Dr Morton Hamburger, Chantute Field, Ill, co-authors "A Study of the Bacterial Contents of the Air of Army Barracks"

**Personal**—Dr Herman L. Kretschmer, President-Elect of the American Medical Association received the honorary degree of doctor of science from Marquette University School of Medicine, Milwaukee, during its commemoration exercises October 18 Dr Kretschmer gave the commencement address entitled "Medical Education the War and You"—Dr William W Bauer Director of the Bureau of Health Education of the American Medical Association has been elected to the governing council of the American Public Health Association for a three year term expiring in 1946—Dr Raymond J L Norriss has been appointed assistant to Dr William H Haines director of the Cook County Behaviour Clinic

**Anatomists Honored**—Reuben M Strong Ph D., professor and chairman of the department of anatomy at Loyola University School of Medicine and Thesle T Job Ph D., professor of anatomy, were honored at a dinner in the Medinah Club October 31 given by the student body marking their

completion of twenty-five years as members of the faculty. Speakers at the dinner included Dr. Raymond B. Allen, dean, University of Illinois College of Medicine, Dr. Basil C. H. Harvey, professor emeritus of anatomy, University of Chicago School of Medicine, Leslie B. Arcy, Ph.D., embryologist, Dr. John L. Keelev, assistant clinical professor of surgery at Loyola, and Rev. Joseph M. Egan, S.J., president of Loyola.

**Dr. Anderson Joins American Medical Association**—Dr. George K. Anderson, technical aide, division of medical sciences of the National Research Council, Washington, D. C., became Secretary of the Council on Foods and Nutrition of the American Medical Association November 4. Dr. Anderson graduated at the University of Rochester School of Medicine and Dentistry, Rochester, N. Y., in 1938, serving his internship at the Strong Memorial Hospital in Rochester. After he completed residencies at the Children's Hospital, Cincinnati, and at the Strong Memorial Hospital, Dr. Anderson served as pediatric consultant for the North Carolina State Board of Health and professor of pediatrics at the University of North Carolina School of Public Health, Chapel Hill.

**Graduate Course in Endocrinology**—On October 11-16 a graduate course in endocrinology was given as a part of a postgraduate program of the American College of Physicians in cooperation with the University of Illinois College of Medicine and the Presbyterian Hospital under the direction of Dr. Willard O. Thompson. Seventy-four registrations represented the following states and Canadian provinces: California, Colorado, Delaware, Florida, Illinois, Indiana, Iowa, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Nebraska, New Mexico, Ohio, Pennsylvania, South Dakota, Texas, Utah, Wisconsin, Alberta and Ontario. Most of the attendants at the course are engaged in the practice of internal medicine in their respective communities and many are working in special clinics devoted to the study of endocrine diseases.

## INDIANA

**Personal**—Dr. Herman M. Baker, Evansville, was chosen president of the Indiana State Board of Health at its meeting, recently. Dr. Baker has been a member of the board for a number of years and has also previously served as president. —Dr. William D. Weis, Crown Point, health commissioner of Lake County, on September 4 was elected president of the Old Settlers and Historical Association. —Dr. Bertis C. Gwaltney, Fort Branch, health officer of Gibson County, has been appointed assistant collaborating epidemiologist of Indiana.

**Stream Pollution Board**—The creation of a state stream pollution control board was made possible under the enactment of 1943 legislation. Members of the board include Leo Besozzi, consulting engineer of Hammond, George C. Hillenbrand, manufacturer, Batesville, Joseph L. Quinn, technical secretary of the board, appointed by the state board of health, Cecil K. Calvert, bacteriologist, superintendent of purification, Indianapolis Water Company, Hugh J. Barnhart, director, state department of conservation, and Dr. Thurman B. Rice, Indianapolis, chairman, acting state health commissioner, as ex officio member.

## IOWA

**Interprofessional Meeting**—Miss Stella Scott, R.N., Iowa City, was reelected president of the Iowa Interprofessional Association at its meeting in Des Moines, October 6, and Dr. Alonzo L. Jenks Jr., Des Moines, secretary. Dr. John W. Billingsley, Newton, discussed the Wagner-Murray-Dingell bill and Dr. Walter L. Bierring, state health officer, Des Moines, the history of chemotherapy.

**State Mental Hygiene Association Proposed**—Dr. Norman D. Render, Clarinda, has been named chairman of a committee to develop an Iowa State Mental Hygiene Association. A number of superintendents of state institutions under the state board of control recently met in a preliminary session with Dr. Walter L. Bierring, state health officer, to discuss the possibilities of a state society, but final organization will not be effected until spring.

**Personal**—Howard Reynolds, Ph.D., assistant professor of home economics, University of Arkansas, Fayetteville, has been appointed assistant professor of bacteriology at Iowa State College of Agriculture and Mechanic Arts, Ames, he will also be in charge of research on food bacteriology for the Iowa Agricultural Experiment Station. Lester O. Krampitz, Ph.D., assistant in physiology of the Rockefeller Institute for Medical Research, New York, resigned on September 1 to accept an appointment as research associate at Iowa State College to have charge of the study of penicillin carried out by the Industrial Science Research Institute. —Dr. Frank M. Fuller, Keokuk, since 1925 a member of the Iowa State Board of

Medical Examiners, has resigned. He has been succeeded by Dr. Arthur D. Woods, State Center. Dr. Fuller, a former president of the state medical society, was secretary of the state board from 1925 to 1937.

## MARYLAND

**Rheumatic Fever and Rheumatic Heart Disease Reportable**—On September 23 rheumatic fever was added to the list of reportable diseases by the state department of health. A release from the state department of health states that among children between the ages of 5 and 14 years of age in Maryland rheumatic fever and rheumatic heart disease caused more deaths than any other disease except tuberculosis. The release states further that in the United States in 1941 there were 497 deaths from rheumatic fever between the ages of 5 to 12 and 1,206 deaths in the same age group from tuberculosis. In Maryland for the same year there were 13 deaths in the age group from 5 to 14 from rheumatic fever and 30 deaths from tuberculosis.

**Five Year Morbidity Study Ends**—The U. S. Public Health Service and the Milbank Memorial Fund have concluded a five year morbidity study in wards 6 and 7 of the Eastern Health District. Miss Jean Downes of the fund supervised the work, which was carried out in cooperation with the Johns Hopkins School of Hygiene and Public Health and the Baltimore Department of Public Health. The chief aims of the study were to ascertain the maximum amount of illness in a population composed of families and to learn more about the chronic diseases which are a major cause of disability. To achieve these aims a responsible member of each family in the study was asked to give information concerning the illnesses in the family to a field worker, who made a visit once a month. Slightly more than 2,000 families participated in the study. The records of sickness, which were collected over a period of five years, are strictly confidential and are to be used for statistical purposes only.

## MASSACHUSETTS

**License Revoked**—The Massachusetts Board of Registration in Medicine revoked the license of Dr. Theodore Rosen, Brookline, October 6, because of "gross misconduct in the practice of his profession as shown by his conviction in court."

**Alumni Lecture**—Brig. Gen. Raymond W. Bliss, M.C., U. S. Army, assistant to the surgeon general, Washington, D. C., will deliver the Tufts Medical Alumni Lecture, November 17, at the medical school, Boston. His subject will be "Plans and Operations of the Surgeon General's Office."

## MICHIGAN

**Changes in Health Officers**—Dr. Charles F. Atkinson, Indian River, has been appointed medical director of district number 1 of the state health department located at Lake City. —Dr. Albert F. Litzenburger, Boyne City, has been appointed director of district health unit number 3 with headquarters in Charlevoix and serving Charlevoix, Emmet, Antrim and Otsego counties. —Dr. Thomas S. Davies has been named health commissioner of the Grosse Pointe townships, succeeding Dr. Benjamin H. Warren, resigned.

**Training Course in Industrial Hygiene for Plant Safety Personnel**—The Michigan Industrial Hygiene Society and the School of Public Health of the University of Michigan, Ann Arbor, cooperated in an "in-service training course in industrial hygiene for plant safety personnel," October 19-21. Among the speakers were:

Henry F. Vaughan, Dr. P.H., Ann Arbor, Orientation  
Dr. Clarence D. Selby, Detroit, The Significance of Industrial Hygiene  
O. F. Lehman, Detroit, The Relationship of the Safety Engineer to Industrial Hygiene  
Royd R. Sayers, medical director, U. S. Public Health Service, Environmental Aspects of Industrial Hygiene  
William G. Frederick, Sc.D., Detroit, Control of Solvent Vapors and Acid Mists  
Helmuth H. Schrenk, Ph.D., Pittsburgh, Control of Smokes, Fumes and Gases  
J. J. Bloomfield, senior sanitary engineer, U. S. Public Health Service, Evaluation and Control of Dust  
W. N. Witheridge, Detroit, Industrial Ventilation Practices  
J. A. Purdy, Detroit, Personal Protective Clothing and Equipment  
Louis Schwartz, medical director, U. S. Public Health Service, Causative Agents of Industrial Dermatitis  
Herbert G. Dyktor, Lansing, Plant Sanitation  
W. L. Lovett, Detroit, Maintenance and Its Relation to Safety and Health  
A. C. Funke, Detroit, How to Make a Survey for Health Hazards  
John W. Gibson, Detroit, How to Sell Industrial Hygiene to the Worker  
Dr. Kenneth E. Markuson, Lansing, How to Utilize the Resources of Official and Private Industrial Hygiene Agencies

**Mental Hygiene Unit for Marquette**—The fifth mental hygiene unit to be established under the state's program will be established in Marquette. Recently only two cities submitted bids for this unit, Marquette and Escanaba. (TUF

**JOURNAL**, September 18 p 158) The state will submit about \$12,000 in professional salaries to the new child guidance clinic, while the host county will be expected to provide about \$3,000 worth of quarters, equipment and secretarial services. All the clinics are organized and supervised by the Michigan State Hospital Commission. Their functions are for the diagnosis and treatment of behavior and personality disorders of children and the promotion of preventive and educational programs.

### MINNESOTA

**The Bell Lecture**—Dr John B Barnwell, associate professor of internal medicine, University of Michigan Medical School, Ann Arbor, will present the tenth annual John W Bell Lecture, November 29 Minneapolis, on "Tuberculosis Contacts in Hospital Personnel." The Bell Lecture is sponsored jointly by the Hennepin County Tuberculosis Association and the Hennepin County Medical Society.

### MISSOURI

**The Barnard Lecture**—Clarence C Little ScD Bar Harbor, Maine, will deliver the annual Barnard Free Skin and Cancer Hospital Lecture before the St. Louis Medical Society, November 16, on "Influence of Heredity in Human Cancer."

**Personal**—An honorary degree of doctor of science was given Dr Joseph Grindon Sr, St Louis, by St Louis University at a surprise party in honor of his eighty-fifth birthday on August 20. Dr Grindon was guest at a dinner given in his honor by the St Louis Dermatological Society at the Coronado Hotel St. Louis, August 30. — Dr Sherwood Moore, director of the Edward Mallinckrodt Institute of Radiology of Washington University, St. Louis, and president of the American Roentgen Ray Society, has been appointed a member of the National Advisory Cancer Council by Surg Gen. Thomas Parran of the U S Public Health Service.

### NEW YORK

**Graduate Lectures**—Dr Joseph Ernest Del Monaco, associate professor of clinical surgery, Syracuse University College of Medicine, Syracuse, will discuss "Plasma Therapy and Whole Blood Transfusion" before the Tompkins County Medical Society, Ithaca, November 16. Dr Forrest O J Young, associate professor of surgery (plastic surgery), University of Rochester School of Medicine and Dentistry, Rochester, discussed "The Early and Late Treatment of Burns" before the Steuben County Medical Society on November 11 in Bath. The lectures are presented under the joint auspices of the state medical society and the state department of health.

### New York City

**Mobile X-Ray Unit for Paderewski Hospital**—A complete mobile x-ray laboratory is available for eventual use at the Paderewski Polish Hospital, Edinburgh Scotland. It was developed by the Westinghouse X-Ray Division and purchased by donations from sixty-five American cities.

**Division of Industrial Hygiene Created**—Dr Nathan Millman, Brooklyn, has been appointed director of the new division of industrial hygiene established as a joint program of the state department of labor, the New York City Health Department and the U S Public Health Service. An experimental program for six months will be carried out in the Astoria, Long Island, area.

**The Second Harvey Lecture**—Francis J W Roughton Ph.D., fellow of Trinity College and lecturer in physicochemical aspects of physiology, Cambridge University, Cambridge, England, will deliver the second Harvey Society Lecture of the current series at the New York Academy of Medicine, November 18. Dr Roughton's subject will be "Recent Work on the Respiratory Chemistry of the Blood."

**Columbia University News**—Recent appointments to Columbia University College of Physicians and Surgeons include those of Drs Conrad Brems as professor of clinical ophthalmology and James M Smith as professor of clinical otolaryngology. Donald H Cook Ph.D. of the School of Tropical Medicine at San Juan P.R. has been appointed visiting professor of chemistry at Columbia University. The university has received 103 cash gifts totaling more than \$199,000 to finance research in medicine, chemistry and allied sciences as well as to support studies in economics, history, philosophy and statistics. A contribution of \$23,310 from the Commonwealth Fund will be used to finance studies in the department of obstetrics and gynecology.

**Personal**—Col George Baelir, chief medical officer, U S Office of Civilian Defense, Washington, D C., and a member of the public health council of the state of New York, has been elected a member of the board of managers of the State Charities Aid Association.—The Bronx Council of the American Jewish Congress has presented Dr Thomas H Curtin, president of the Bronx Interfaith Council, with its good citizen award for 1943 in recognition of his efforts toward bringing about "better understanding among men of all faiths."—Dr Oswald S Lowles recently returned from a lecture tour of Central American countries. He conducted conferences and operative clinics in Tegucigalpa, Honduras, San Salvador, Guatemala and Mexico.

**Report of Cancer Clinics**—Of 654 persons examined in the cancer prevention clinics of Memorial Hospital for the Treatment of Cancer and Allied Diseases during a period of twenty-eight months, 263 came without complaint or symptoms. According to the *Bulletin* of the American Society for the Control of Cancer 49 were found to have malignant tumors, 162 had benign tumors, 25 had other serious diseases such as heart disease, gastric ulcers and tuberculosis, and 155 were without demonstrable evidence of disease. Of those who applied for examinations 75 per cent were found to have cancer, the majority having malignant tumors in the early stages. Of the total group who came to the clinic 29 per cent had benign tumors, 30 per cent had constitutional diseases and 33 per cent showed no disease. Of the 263 who applied but who were unaware of any symptom of disease at the time of their first visit, 4 had malignant tumors, 50 had benign lesions, 15 had some type of serious disease and 194 had no evidence of disease. Revisits to the clinic within a year amounted to 60 per cent. Ten per cent returned in six months.

### OHIO

**The Lower Lecture**—Dr Irvine H Page, director, Lilly Clinic, Indianapolis City Hospital, Indianapolis, will deliver the annual Lower Lecture before the Academy of Medicine of Cleveland, November 19. His subject will be "The Nature of Hypertension."

**New Health Council**—The Columbus Council of Social Agencies has organized a health council to promote the coordination of public and private health work and to aid in securing continuity of program. Under the plan, eight members of the Columbus Academy of Medicine will serve as members of the new health council. Drs George T Harding, president of the academy, William D Inglis, president-elect, George J Heer, Jonathan Forman, Francis A Riebel Clifford C Sherburne, president, Ohio State Medical Association Charles W Paye and Donald F Bowers. Dr Russel G Means formerly president of the academy, is chairman of the health council and is one of the eight additional members named by the council of social agencies. Included in the latter group also is Dr Nelson C Dysart, health commissioner of Columbus. The combined sixteen members are to select the remaining five persons composing the full membership of the council. Other objectives of the new group are:

To serve as a forum for discussion of health, sickness problems, policies and plans.

To develop new standards of service and to improve present standards through joint study of special problems.

To secure improvement in existing health facilities and services and the establishment of new and additional health facilities or services where needed.

To assist the official and nonofficial agencies in bringing their personnel to a level which meets acceptable standard qualifications.

To cooperate with official and nonofficial health agencies for the provision of refresher courses and in service training with allocation of time and financial assistance for such purposes if necessary for additional education to meet the standards of national health agencies.

To prevent duplication of effort.

To give moral support to health departments and to aid in community health education in cooperation with the medical and dental societies and other participating agencies.

**Society Presents Plan for Obstetric Care of Service Men's Wives**—The Montgomery County Medical Society adopted a resolution October 13 urging the establishment of a private antepartum clinic at the Good Samaritan Miami Valley and St. Elizabeth hospitals, Dayton under direct supervision of a staff obstetrician, for wives of enlisted men participating in the Emergency Maternity and Infant Care Program. The resolution declares that the program is placing an added strain on already overtaxed medical service facilities in the community and points out that the use of the clinic will in no way interfere with patients employing their own private physicians. Practicing physicians with requisite hospital privileges may refer patients to the private antepartum clinic. They will receive a complete report of the history, physical and laboratory results,



and the referring physician or his associate must be in attendance at the delivery. A list of participating physicians who are approved for obstetric practice in the hospitals shall be available at the city of Dayton and the Montgomery County Health departments. In the event that an applicant for care has no physician, she shall be privileged to select a physician from the prepared list. If no selection is made, she shall be referred by the health department to the hospital private antepartum clinic of her choice, and the attending staff obstetrician on duty shall make the necessary arrangement for her care. The resolution affirms the agreement of the society with the apparent purpose of the Emergency Maternity and Infant Care Program, namely to offer assistance to the wives and children of boys in the armed forces, to record its disagreement with the method of application, viewing with alarm the "spread of bureaucracy in any field."

### PENNSYLVANIA

**Tuberculosis Fellowships Awarded**—The Pennsylvania Tuberculosis Society awarded scholarships to Drs Philip L Rettew, Morgantown, and Thomas G McQueen, Mifflingburg. The scholarships will enable the physicians to participate in a postgraduate course in the Trudeau School of Tuberculosis at Saranac Lake, N Y. Usually only one award is made by the society, but this year two were presented, the Trudeau School made one award available. Dr Rettew graduated at the University of Pennsylvania School of Medicine, Philadelphia, in 1941 and Dr McQueen at the University of Cincinnati College of Medicine in 1929.

#### Philadelphia

**Ophthalmic Postgraduate Conferences**—On November 4 the eye section of the Philadelphia County Medical Society started a series of postgraduate conferences with Drs Alfred Cowan and Sidney L Olsho discussing "The Diagnosis of Corneal Diseases" and "Practical Points in the Refraction of the Eye" respectively. Others in the series include

- Drs Wilfred E Fry, Pathology and Corneal Diseases and Isaac S Tassman, The Newer Techniques in Ocular Refraction, December 16
- Drs George F J Kelly, Practical Points Pertaining to Perimetry, and Edmund B Spaeth, Intraocular Foreign Bodies, January 20
- Drs Walter I Lillie, Retrobulbar Neuritis, and James S Shipman, Rationale of the Use of Sulfa Drugs in Ophthalmology, February 17
- Drs Francis H Adler, Effect of the War Gases on the Eye, and Louis Lehrfeld, Treatment of Glaucoma, March 16

**Annual Dinner of Ex-Resident and Resident Physicians**—The fifty-seventh annual dinner of the Association of Ex-Resident and Resident Physicians of the Philadelphia General Hospital will be held on December 7 at the Warwick Hotel with Lieut Comdr Thomas F Dulugg (MC), U S Navy, retired, president of the association, presiding. Dr William Pepper, dean of the University of Pennsylvania School of Medicine, will be the guest of honor. Other guests will be Capt Joseph A Biello (MC), U S Navy, Mayor Bernard Samuel, Col Samuel S Creighton, M C, U S Army, retired, Col Henry Beeuwkes, M C, A U S, Capt Abraham H Allen (MC), U S Navy, Dr Hubley R Owen, director of health of the city, Dr William G Turnbull, superintendent of the Philadelphia General Hospital, Dr Herbert M Goddard, coroner for the county of Philadelphia, and Dr Frank M Cline. Ex-residents who do not receive notices of the annual dinner are requested to send their correct addresses to the secretary, Dr George Wilson, 133 South 36th Street.

**County Society Resumes Examinations of Members**—The Commission on Physicians' Health, appointed by the Philadelphia County Medical Society in 1941, recently decided to revive its program to hold periodic health examinations of its members. This activity was temporarily discarded in the spring because of the number of physicians of the vicinity who are in the armed forces and because of the death of the chairman of the commission, Dr James Alexander Clarke Jr. Dr Myer Solis-Cohen is the new chairman of the commission. *Philadelphia Medicine*, official bulletin of the society, on October 23 carried an announcement outlining the objectives of the program as follows: to preserve the health of each member, to set an example for one's patient and to the public, thereby stimulating periodic physical examinations among them, to find out more about the early beginnings of disease and to prevent illness. Groups of qualified physicians in every branch of medicine will examine members of the society periodically at no expense to those examined, the results to be kept in strict professional confidence. It was pointed out, however, that the investigation will be undertaken only if a sufficient number of physicians register to make it a worthwhile scientific contribution to medical knowledge.

### TEXAS

**Ordinance Provides Dogs for Baylor University**—On September 29 the city council of Houston passed an ordinance "directing that all dogs taken up and impounded and not redeemed or purchased as provided for in said ordinance shall be delivered to the Baylor University College of Medicine, Houston, in such numbers as requested by the college for use in the educational and research program of the college." The action was said to be taken after some opposition had been shown concerning the disposition of these animals to the college of medicine.

### WEST VIRGINIA

**Refractory Tuberculosis Patients to Be Detained**—The Public Health Council of West Virginia at a meeting in Charleston, October 25-27, went on record as defining tuberculosis contagious and subject to quarantine and requested the board of control to take the necessary steps for the detention in the state tuberculosis sanatoriums of "refractory or rebellious patients." It was brought out at the meeting that a number of patients had already left one of the state institutions prematurely, against the advice and without the consent of the members of the staff, to accept work in nearby defense plants. The action was taken by the public health council after the attorney general had ruled such a step legal.

**Health Council Reduces Internship**—The public health council, cooperating with the federation of state licensing boards, has reduced the period of minimum internship required by licensure from twelve to nine months. The action was taken at Charleston, October 25-27. The council, in the resolution, declined to accept the recommendation of the council of the West Virginia State Medical Association that temporary permits to practice medicine be granted for the duration to graduates of unrecognized schools in order that medical care might be provided in certain areas where a doctor shortage is found to exist (*THE JOURNAL*, October 23, p 497). The council felt that the legal difficulties involved would render the successful operation of such a plan impossible. The state medical association recommendation made it clear that such a permit granted would be revoked absolutely not later than six months after the cessation of hostilities. The council will meet in Charleston, January 3-5, to examine applicants for licensure.

### PHILIPPINE ISLANDS

**Dr Whitacre Repatriated**—Dr Frank E Whitacre, professor and head of the department of gynecology and obstetrics at Peiping Union Medical College, Peking, China, is reported to be repatriated on the *Gripsholm* arriving in New York about December 2. Dr Whitacre has been interned by the Japanese since 1942. He was formerly associated with the Chicago Lying-In Hospital of the University of Chicago and the Tennessee State Medical Association in connection with the Commonwealth Fund postgraduate education program.

### GENERAL

**Special Society Elections**—Dr Claude W Munger, medical director of St Luke's Hospital, New York, was named president-elect of the American College of Hospital Administrators at its meeting in Buffalo in September. Dr Robert H Bishop Jr, medical director of the University Hospitals, Cleveland, was installed as president—Dr John J Sippy, county health officer, San Joaquin County, Stockton, Calif, was in October named president-elect of the American Public Health Association and Dr Felix J Underwood, secretary of the state board of health, Jackson, Miss, was installed as president.

**Compulsory Premarital Physical Examinations for Tuberculosis**—No states require a premarital physical examination for tuberculosis, according to the *Bulletin* of the National Tuberculosis Association. Three states, Washington, North Carolina and North Dakota, have legislation which prevents persons from marrying who have infectious tuberculosis, and three other states, Delaware, Indiana and Pennsylvania, have general laws covering the marriage of persons with a transmissible disease. Tuberculosis is not specified in these laws, it was stated, but would be covered by the term "transmissible."

**Academy of Tropical Medicine**—The American Academy of Tropical Medicine will meet in Cincinnati, November 17, at the Gibson Hotel. Lieut Col Thomas T Mackie, M C, A U S, will act as toastmaster at the association's tenth annual dinner. Dr Lewis W Hackett, Buenos Aires, Argentina, will deliver his presidential address on "The South American Scene." Dr Charles F Craig, San Antonio, Texas, will



be awarded the Theobald Smith Gold Medal of the George Washington University School of Medicine, Washington, D. C., at this session, the presentation to be made by Dr Herbert C. Clark, Panama, Republic of Panama

**Schering Prizes for Undergraduate Study**—"Hormones and Cancer" is the theme of the third nationwide competition for the Schering Award, three major prizes of a total value of \$1,000 going to the undergraduate medical students who submit the best critical dissertations on the subject. The Schering Award was established by the Schering Corporation in 1941 for the purpose of encouraging a wider interest in current endocrinologic developments among undergraduate medical students. The competition is sponsored and administered by the Association of Internes and Medical Students, and participation is limited to undergraduate medical students in the United States and Canada. All manuscripts must be submitted not later than Jan 15 1944. Communications should be addressed to "The Interne," 7 East 42d Street, New York 17

**Borden Award in Nutrition**—The American Institute of Nutrition announces that nominations are now being received for the Borden Award in Nutrition, given in recognition of distinctive research by investigators in the United States and Canada, which has emphasized the nutritive significance of the components of milk or of dairy products. The award will be made primarily for the publication of specific papers, but the judges may recommend that it be given for important contributions over an extended period of time. The award may be divided between two or more investigators. Employees of the Borden Company are not eligible for this honor. To be considered for the award, nominations must be in the hands of the chairman of the nominating committee Henry A. Mattill, Ph.D., University of Iowa, Iowa City, by Feb 1 1944. The nominations should be accompanied by such data relative to the nominee and his research as will facilitate consideration for the award

**National Malaria Society**—The National Malaria Society will meet at the Gibson Hotel, Cincinnati, November 16-18. A joint session of the society with the American Society of Tropical Medicine, Thursday, will consist of a symposium on "A National Program for the Control of Malaria." Included among the speakers on the program will be

Dr Felix J. Underwood Jackson, Miss., Malaria Prevention Activities of State Boards of Health  
Dr Lewis W. Hackett Buenos Aires Argentina, Spleen Measurement in Malaria and Its Recording  
C. W. Kruse, assistant engineer A. D. Hess, malarologist and R. L. Metcalf, assistant entomologist, Tennessee Valley Authority, Wilson Dam, Ala. Airplane Dusters for the Control of Anopheles Quadrimaculatus on Impounded Waters  
James C. Andrews Ph.D. and William E. Cornaker S.M. Chapel Hill N. C. The Absorption of Quinine Salts from Isolated Intestinal Loops of Dogs

Brig Gen James S. Simmons, M. C., U. S. Army, will deliver his presidential address, Thursday, on "American Mobilization to Combat Wartime Hazards of Malaria"

**Society of Tropical Medicine**—The American Society of Tropical Medicine will meet in Cincinnati, November 15-18, at the Gibson Hotel. Among the speakers will be

Dr Clarence A. Mills and Esther S. Cottingham, M.T. Cincinnati Influence of Vitamin Intake on Phagocytic Activity  
Dr Harold W. Brown Thomas J. Brooks Jr. M.S. and Emanuel Waletsky Ph.D. Chapel Hill, N. C. The Treatment of Canine Heartworm (Dirofilaria immitis) with Anthiomaline  
Dr Henry Hanson Jacksonville Fla. Malaria in High Altitudes  
Dr Herbert C. Clark Panama, Republic of Panama The Age Level for the Peak of Acquired Immunity to Malaria as Reflected by Labor Forces  
Dr Damaso de Rivas Philadelphia Amebiasis of the Uterus  
Drs Ira Muir Clapper and Gordon B. Myers Detroit The Protean Manifestations of Weil's Disease

Col George R. Callender, M. C., U. S. Army, will deliver the eighth Charles Franklin Craig Lecture on Tropical Medicine, entitled "Diarrheal Diseases." Dr Noel Paul Hudson, Columbus, Ohio, will deliver his presidential address on "A Broader Perspective for Bacteriology" at the annual luncheon on Wednesday

**Industrial Hygiene Personnel**—On August 4 recommendations concerning the assignment of industrial hygiene personnel were adopted by the sanitary engineering committee which will allow each state with an industrial population of less than 500,000 one industrial hygiene engineer, states with 500,000 or more workers two such engineers and one such industrial hygiene engineer for each additional 500,000 workers. The action stemmed from resolutions presented at the War Conference on Industrial Health in Rochester, N. Y., in May, which urged that consideration be given to the present shortage of industrial hygiene personnel. At a meeting in Washington in July J. J. Bloomfield, senior sanitary engineer, division of industrial hygiene National Institute of Health Bethesda Md. stated that there is a total of 257 professional industrial hygiene

personnel in all of the state and local units, of whom 59 are officers on loan from the public health service. The problem of securing engineers and chemists was the major need considered at this meeting, since there are only 187 now in service in these units. It was pointed out that the loss of even one man from the division of industrial hygiene in most states would seriously jeopardize the program. Under the new setup the procurement and assignment service for sanitary engineers of the War Manpower Commission will now operate under its new definition of essentiality, so that only those engineers declared available under the new definition of essentiality would be permitted to accept a commission in any one of the services. It is felt that the statistical basis used which allots a certain number of engineers according to the size of the labor force in each state, should work no hardship on any industrial area, with one exception. This exception is the county of St. Louis, and the committee felt that rather than complicate its new simple definition, and since only one place was involved, it would give favorable consideration to making an exception in the case of St. Louis County, allowing the county to have one industrial hygiene engineer in addition to the chief sanitary engineer already allowed under the original ruling. It would seem, therefore that the engineering personnel now operating in the various state and local industrial hygiene units have fair assurance that they will continue at their present posts, at least as far as the industrial hygiene engineering needs of the war agencies are concerned. The army, navy and public health service and maritime commission are at present not recruiting any additional personnel in the field of industrial hygiene engineering, but in the future should any one of these need additional personnel of this type such personnel would have to clear first through the procurement and assignment service for sanitary engineers of the War Manpower Commission.

**Nutritional Research Program**—The National Live Stock and Meat Board has announced that it will support the following research program for the 1943-1944 period

Dr Paul R. Cannon, chairman, department of pathology University of Chicago School of Medicine, The Influence of Dietary Protein on the Regeneration of Blood Proteins and the Resulting Capacity to Fabricate Antibodies  
Conrad A. Elvehjem, Ph.D. professor of biochemistry, and Frank M. Strong Ph.D. associate professor of biochemistry, University of Wisconsin Madison Investigation of the Amino Acid Content of Meats  
Dr. Elvehjem The Vitamin Content of Meats and the Nutrition of Vitamins During Cooking  
Ruth M. Leverton Ph.D., associate professor of human nutrition research, University of Nebraska Lincoln Blood Regeneration in Women Blood Donors  
Evelyn G. Halliday Ph.D., associate professor of food and food chemistry and Winifred F. Hinman M.S. instructor in food chemistry University of Chicago, Retention of B Vitamins in Braising Beef  
Sylvia Cover Ph.D. foods specialist, and Paul B. Pearson Ph.D. professor of animal nutrition experimental station Agricultural and Mechanical College of Texas College Station Retention of B Vitamins During the Roasting of Meat  
George O. Burr Ph.D. professor and director division of physiologic chemistry University of Minnesota Minneapolis Fat Metabolism and Essential Unsaturated Fatty Acids  
Dr. Arild E. Hansen associate professor of pediatrics, University of Minnesota Medical School Minneapolis Fat Metabolism in Relation to Human Nutrition  
Paul L. Day, Ph.D. professor of physiologic chemistry University of Arkansas School of Medicine Little Rock Nutritional Cryptinemia and Vitamin M in the Nutrition of the Monkey and Related Studies

**Baruch Committee on Physical Medicine**—On October 30 the first meeting of the Baruch Committee on Physical Medicine was held in New York. Officers chosen at the session include Dr Ray Lyman Wilbur, chancellor Stanford University, Calif., chairman, William T. Sanger, LL.D., president of the Medical College of Virginia, Richmond vice chairman and Dr Frank H. Krusen medical director of the School of Physical Medicine Mayo Clinic, Rochester, Minn., director-secretary. Other members of the committee are Dr John S. Coulter, Chicago, Dr Kristian G. Hansson, New York, Dr Carl R. Comstock, Saratoga Springs N. Y. Capt Charles F. Behrens (MC), U. S. Navy, and Lieut. Col Benjamin A. Strickland Jr., M. C., U. S. Army. Nine special committees and their respective chairmen were appointed as follows

Occupational Therapy Dr. Hansson  
Poliomyelitis Dr. Wilbur  
Basic Research Dr. Sanger  
Clinical Research Dr. Coulter  
Publicity Dr. Wilbur  
Hydrology and Health Resorts Dr. Comstock  
Prevention Dr. Hansson  
Teaching Dr. Krusen  
Rehabilitation Captain Behrens

The main office for the Baruch Committee on Physical Medicine will be at 597 Madison Avenue New York. The activities of the various committees will constitute a survey of the field of physical medicine to determine its potentialities ending it is proposed in the establishment of a school of physical therapy for its study and teaching (THE JOURNAL, November 6 p. 648)

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Sept 25, 1943

#### The President of the British Medical Association

The vacancy created by the sudden death of Sir Beckwith Whitehouse, president of the British Medical Association, has been filled by the appointment of Lord Dawson, a former president who held office at the centenary meeting of 1932. This appointment of a president is unprecedented. Not only is Lord Dawson a leading consultant, but he has an unequalled command of medical politics.

In his address on assuming the presidency of the association Lord Dawson said that, in the shaping and organizing of the proposed new medical service, doctors must have an important voice. Changes would be deep and fundamental and would affect all members of the profession, no other nation comparably placed had undertaken so big an endeavor. The service must be built in stages. If properly designed, its administrative direction would not interfere with the freedom of the profession, and the minister had promised that the medical profession would have a large share in such administration. He thought that the local administrative body should be a joint board embracing several major local authorities with vocational advisory bodies attached. We wanted the same essential service for all, namely the best, but without dull uniformity. A comprehensive service, free to all citizens, did not necessarily involve a full time salaried service for all doctors, nor was it necessarily incompatible with private practice. Although he believed that more earnings in the future would be derived from salary and less from fees, Lord Dawson said he was far from convinced that any uniform system of service or payment would meet conditions so multifarious as those attaching to medical practice, and any emergence of official and nonofficial groups of doctors would, in his opinion, be disastrous. He recalled one of the evil consequences of the fact that the Ministry of Health did not accept the advice of leaders of the profession in 1929. This was responsible for the existence of two sets of hospitals and two groups of doctors in many towns. If the ministry had accepted the profession's advice and instituted machinery for progressive coordination of local government and voluntary services, we would be much nearer our goal today.

#### Remarkable Health of British Troops in the War

In his Ludwig Mond lecture at Manchester University Sir Edward Mellanby stated that in this war the health of the British navy, army and air force had been so good as to represent a remarkable achievement. He contrasted this war with Napoleon's invasion of Russia and the French expedition to the Crimea, in which the losses due to illness exceeded those due to wounds and often were more than half the number of soldiers engaged. But even the Eighth Army during its three years in Egypt, Libya and Tunisia, where it has been fighting under conditions ideal for the development of dysentery, typhoid, cholera, smallpox and typhus, has been conspicuously free from disease. Protection by inoculation against typhoid, paratyphoid, cholera, smallpox, tetanus and yellow fever was given to troops before leaving this country. This protection has proved most effective. Much greater protection has been given to our troops by typhoid vaccination than the Italians and Germans have given to theirs. This is reflected in the high rate of these diseases among Italian and German prisoners in our hands as compared to that among our men who were prisoners of the Italians. When the Italian and German prisoners were inoculated with our vaccine, typhoid fever ceased abruptly, and thereafter the endemic rate remained low. Our T A B vaccine

made from strains rich in the V<sub>1</sub> antigen proved much more effective than the Italian vaccine made from nonvirulent strains. The V<sub>1</sub> antigen was a discovery of a British research worker. The incidence of dysentery, even in the fly swarming western desert, remained relatively low among British troops, and those affected reacted well to recently discovered drugs. The incidence of tetanus among British troops in the Middle East was 0.013 per cent whereas in the South African force, in which active immunization had not been carried out, the incidence was 0.16 per cent—twelve times greater. The incidence of dysentery in the western desert also remained low among British troops and those affected responded well to modern treatment. On the other hand, the incidence among Germans and Italians was much higher. It was said that our success at El Alamein was partly due to the enfeeblement of enemy troops by widespread dysentery. Our success in controlling disease was partly due to recent research, for which our medical scientists have not received due credit.

#### "The Running Ear" and the Ruptured Drum in the Army

Men with disorders of the ear are so numerous in the army that the *Army Medical Department Bulletin* publishes the recommendation that every case of the sort should be assessed by an otologist, so that the medical officer may know its exact nature and appropriate treatment. Otologists are requested to classify chronic otitis media as active, quiescent or healed. Broadly speaking, patients with active otitis media need treatment and are fit only for home service, quiescent otitis media needs prophylactic measures and these patients should usually be placed in category B or C. Healed otitis media should be categorized according to the standard of healing. The vast majority of soldiers with discharging ears can be suitably employed in the army. Meticulous cleansing of the external auditory meatus is important. As a rule the ears are best kept dry by insufflation of boric acid and iodine or sulfonamide powder.

Every medical officer should know how to prevent infection of the middle ear when the drum is ruptured. A high proportion (50 per cent) of those injured by blast sustain rupture of the drum. In many this is overlooked because of absence of symptoms or because of more serious wounds. If there is the least chance that the drum has been injured, no drops of any description should be permitted to enter the ear, and on no account should the ear be washed out with a syringe. No manipulations, except under complete asepsis, should be made in the meatus, which must be protected by a sterile dressing of cotton wool. The patient should be told not to blow his nose. If infection of the ear is anticipated, the prophylactic sulfonamide should be given by mouth, and the patient should be seen by the otologist.

## Marriages

PAUL CALVIN JENKS, Burlington, Vt., to Miss Patricia Bickelhaupt of Hammond, N. Y., in New York, September 25.

NATHANIEL ROSCOE SPENCER, Washington, D. C., to Miss Barrier Mae Walsworth of Monroe, La., October 23.

NORMAN W. RAUSCH, Orange, N. J., to Miss Adele D. Hinkemann of West Hartford, Conn., in August.

RUFUS HENRY ALDREDGE, New Orleans, to Miss Mary Elizabeth Barrett of Hammond, La., October 30.

BENJAMIN FRANKLIN LEVI to Miss Joyce Ann Cantor, both of Syracuse, N. Y., in Ithaca, September 18.

GEORGE WILLCOX BROWN, Marietta, Ga., to Miss Betty Andrews of Augusta, September 4.

WARREN FRANCIS SMITH, Oak Park, Ill., to Miss Barbara O'Malley of Chicago recently.

HERMAN GLADSTONE, Chicago, to Miss Madge Willstatter of New York, October 17.

## Deaths

**Wright Clarkson**  $\oplus$  Petersburg, Va., Medical College of Virginia, Richmond, 1912, Army Medical School 1918 specialist certified by the American Board of Radiology, Inc., member of the House of Delegates of the American Medical Association 1935, 1936, 1938, 1939 and 1940, member of the American Roentgen Ray Society, Radiological Society of North America, Inc., American College of Radiology, American Radium Society, Southern Medical Association, and the Petersburg Medical Faculty past president of the American Association for the Study of Neoplastic Diseases, a founder and president of the Virginia Radiological Society served as vice president of the Tri-State Medical Association of the Carolinas and Virginia a founder of the Fourth District Medical Society and chairman of its steering committee served in the medical corps of the U S Army during World War I in 1920 chief of x-ray service at the General Hospital number 41, New York, a lieutenant commander in the medical corps, U S Naval Reserve on the staffs of the John Randolph Hospital, Hopewell, Petersburg and Central State hospitals, founder and president of the Virginia Cancer Foundation, trustee of the Southern College, radiology editor, *Southern Medicine and Surgery*, died in the Garfield Memorial Hospital Washington, D C, October 17, aged 53, of leukemia

**Frank William Howard Taylor**, Los Angeles, College of Physicians and Surgeons Los Angeles, 1917 also a lawyer member of the California Medical Association instructor in x-ray and electrotherapy at the University of Southern California, 1919-1920, instructor in military x-ray and chief roentgenologist, medical corps, U S Army, and later lieutenant commander in the U S Naval Reserve during World War I, roentgenologist at the Clara Barton French, Angelus and Roosevelt hospitals, Pottenger Sanitarium and the Veterans Administration Facility, Sawtelle, from 1919 to 1929, vice president of the Taylor Holding and Investment Corporation medicolegal consultant and medical director of the Southwest X-Ray and Clinical Laboratories, author of "Lawyers' Text and Atlas of the Human Body", died July 2, aged 52 of coronary thrombosis

**Wilson Johnston**  $\oplus$  Portland Ore Kentucky School of Medicine, Louisville, 1892 associate clinical professor of ophthalmology at the University of Oregon Medical School, specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology member of the House of Delegates of the American Medical Association in 1911, member of the American Academy of Ophthalmology and Otolaryngology, Western Ophthalmological Society and the Pacific Coast Oto-Ophthalmological Society past president of the Oregon and Washington state medical societies formerly a member of the Washington State Board of Health fellow of the American College of Surgeons served during World War I, chairman for the procurement and assignment service, on the staff of the Coffey Memorial Hospital died in Multnomah August 15, aged 75, of coronary thrombosis

**Robert Jesse Reynolds**, Potsdam N Y Columbia University College of Physicians and Surgeons New York, 1915, member of the Medical Society of the State of New York secretary of St. Lawrence County Medical Society served on the Mexican border in 1916 and as a captain in the medical corps of the 27th division in France during World War I member and examining physician for draft board number 412 secretary of the staff of the Potsdam Hospital on the staff of the Stephen B. Van Duzee Hospital Gouverneur, and the Massena Memorial Hospital a director of the Citizens National Bank and emergency medical director of St. Lawrence County War Council, died in Madrid August 14 aged 52 of coronary thrombosis

**Edgar Cannon Armstrong**, Laurel Miss University of Nashville (Tenn.) Medical Department 1908 member of the Mississippi State Medical Association died August 29 aged 61

**John T. Bogard**, Mena Ark Memphis (Tenn.) Hospital Medical College 1899, died August 20, aged 72

**Charles William Bower**, Lehigh, Pa University of Vermont College of Medicine Burlington 1879 University of Pennsylvania Department of Medicine, Philadelphia 1880 died August 29 aged 88 of senility

**Charles F. Brady**, Parsons Kan Keokuk (Iowa) Medical College College of Physicians and Surgeons, 1903 died August 13 aged 65, of coronary occlusion

**Charles E. Caswell**, Wichita Kan Kansas Medical College, Medical Department of Washburn College Topeka 1902

member of the Kansas Medical Society, died recently, aged 73, of cerebral thrombosis and arteriosclerosis

**Frederick J. Champney**, North Baltimore, Ohio, Detroit College of Medicine, 1893 died in Findlay August 17, aged 76, of pneumonia

**William H. Chapman**  $\oplus$  Blythe, Calif., University of Nebraska College of Medicine, Omaha, 1902, member of the city council, school board and chamber of commerce, physician for Riverside County and the Santa Fe Railroad died in the Loma Linda Sanitarium and Hospital August 19, aged 66 of bronchopneumonia and hypertension

**Stephen Reaves Coleman**, Washington, D C, University of Texas School of Medicine Galveston 1917, on Sept 7, 1942 commissioned a major in the medical corps, Army of the United States, not on active duty served during World War I associated with the Veterans Administration on the staff of the Veterans Administration Facility, past president of the District of Columbia Urological Society, died August 30, aged 55 of hypertension

**Louis Joseph Cooke**, Minneapolis, University of Vermont College of Medicine, Burlington 1894, director of athletics at the University of Minnesota, formerly physical director of the Y M C A at Toledo, Ohio, Duluth, Burlington, Vt., and Minneapolis, on the staff of the University Hospitals, died August 19, aged 75, of hypertension

**Willis Hiram Corson**, Seattle Cooper Medical College, San Francisco, 1905, member of the Washington State Medical Association served with the Italian army during World War I, awarded the Italian Cross of Honor and a Chevalier of the Crown in recognition of exceptional service to the Italian people, formerly coroner of King County, at one time medical superintendent of the King County Hospital, died August 19, aged 64, of carcinoma of the larynx

**Robert Duval Cousins**, Beaumont, Texas, Fort Worth School of Medicine, Medical Department of Fort Worth University, 1902 died August 26, aged 68, of typhus and pneumonia

**Omar Legrand Cox**  $\oplus$  Iola, Kan., Cotner University Medical Department, Lincoln, Neb., 1894 secretary and past president of the Allen County Medical Society a captain in the medical corps of the U S Army during World War I member of the State Board of Medical Registration and Examination on the staff of St. John's Hospital died in the Veterans Administration Facility Wichita, August 22, aged 76 of heart disease.

**Mary Gamble Cummins**, Oak Bluffs, Mass the Hahnemann Medical College and Hospital, Chicago, 1893 at one time a member of the board of education of Paterson, N J died August 20, aged 73

**Emory S. Deaver**, Monroe Ga Hospital Medical College Atlanta, 1911, died August 25, aged 65, of heart disease

**William Emmett Denman**, Greenwood, Miss Memphis (Tenn.) Hospital Medical College, 1907, member of the Mississippi State Medical Association and the American College of Chest Physicians on the staff of the Greenwood-Leflore Hospital, died August 28, aged 61, of coronary occlusion

**Edwin Strassbridge English**, Brevard, N C, University of the South Medical Department, Sevanee, Tenn 1900 past president of the Transylvania County Medical Society member of the Medical Society of the State of North Carolina on the staff of the Transylvania Community Hospital, died August 19, aged 75, of coronary thrombosis

**Charles Henry Gardner**  $\oplus$  Senior Surgeon U S Public Health Service, retired, Baltimore Columbian University Medical Department, Washington D C, 1890 entered the U S Public Health Service on Jan 28 1892 died in the U S Marine Hospital August 10, aged 78 of coronary thrombosis

**Eugene John Gay**, French Camp Calif Drake University Medical Department, Des Moines 1897 member of the California Medical Association on the staff of the San Joaquin General Hospital where he died recently aged 72, of rheumatic heart disease

**David Arnold Goldman**, St Louis St Louis University School of Medicine, 1935 member of the Medical Association of Georgia began extended active duty as a first lieutenant in the medical reserve corps of the U S Army on Nov 5 1940 honorably discharged Aug 17 1941 died in the Grisco Employees' Hospital August 25, aged 35, of multiple polypoid carcinoma

**Frank Starr Gregory**  $\oplus$  Redwood City Calif Cooper Medical College, San Francisco 1900 past president of the San Mateo County Medical Society head of the Selective

Service Board, at one time mayor of Pittsburg, on the staff of the Mills Memorial Hospital, San Mateo, where he died August 21, aged 68, of myocardial infarction

**Paul Lee Hammond**, Bradley, Ark., St. Louis College of Physicians and Surgeons, 1917, Kansas City (Mo.) College of Medicine and Surgery, 1921, died August 6, aged 53

**John Windsor Harbarger**, Jackson, Ohio, Kentucky School of Medicine, Louisville, 1892, a captain in the medical corps of the U. S. Army during World War I, died in the Veterans Administration Facility, Huntington, W. Va., August 27, aged 76, of heart disease

**Henry Winston Harper** ♂ Austin, Texas, University of Virginia Department of Medicine, Charlottesville, 1892, also a pharmacist and lawyer, teacher of chemistry at the University of Texas from 1894 to 1943 and dean of the graduate school from 1913 to 1936, died in the Seton Hospital August 28, aged 84

**Charles Lewis Haywood Jr** ♂ Elkin, N. C., Harvard Medical School, Boston, 1927, diplomate of the National Board of Medical Examiners, fellow of the American College of Surgeons, medical director of the Hugh Chatham Memorial Hospital, died August 22, aged 40, of coronary thrombosis

**Joseph Marion Heard**, Aberdeen, Miss., Long Island College Hospital, Brooklyn, 1890, died August 25, aged 89, of intestinal hemorrhage

**Frederick Eric Hellbaum**, Bakersfield, Calif., Stanford University School of Medicine, San Francisco, 1935, commissioned a captain in the medical corps, Army of the United States, Sept. 2, 1942 and honorably discharged Jan. 16, 1943, served as resident physician at the Kern General Hospital, on the staff of the Mercy Hospital, where he died September 4, aged 41, of coronary occlusion

**Robert Wing Hemingway** ♂ Bend, Ore., Rush Medical College, Chicago, 1925, also a pharmacist, fellow of the American College of Surgeons, member of the staffs of St. Charles and Lumbermen's hospitals, died August 27, aged 48, of coronary thrombosis

**Archibald Murphy Henry**, Brownwood, Texas, Louisville (Ky.) Medical College, 1888, died July 1, aged 82

**Melvin K. Henry** ♂ Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1893, formerly on the staff of the Frankford Hospital, died August 5, aged 72, of bronchial asthma and coronary thrombosis

**Wallace John Herriman**, Rochester, N. Y., University of the City of New York Medical Department, 1879, served as a surgeon, lieutenant commander in the U. S. Navy during World War I, died August 28, aged 85

**Albert James Hodgson**, Waukesha, Wis., Rush Medical College, Chicago, 1886, member of the State Medical Society of Wisconsin, formerly secretary of the Waukesha County Medical Society, awarded an honorary degree of doctor of science by Carroll College in 1916, died in the Summit Hospital, Oconomowoc, Wis., October 5, aged 84, of myocarditis

**Frederick F. Holroyd**, Princeton, W. Va., College of Physicians and Surgeons, Baltimore, 1910, member of the West Virginia State Medical Association, served during World War I, city health officer, chief physician for the Mercer County Jail, on the staff of the Mercer Memorial Hospital, died August 15, aged 57, of coronary thrombosis

**Jerry Morris Hyde** ♂ Nelsonville, Ohio, Bellevue Hospital Medical College, New York, 1885, formerly examiner for several insurance companies, died August 26, aged 83, of cerebral hemorrhage

**George Tasker Imrie** ♂ Rochester, N. Y., Trinity Medical College, Toronto, Ont., Canada, 1902, member of the staff of the Park Avenue Hospital, died August 28, aged 71, of cerebral hemorrhage

**Oscar Lee Jones**, Fort Worth, Texas, University of Louisville (Ky.) Medical Department, 1887, died in the Methodist Hospital August 21, aged 79, of heart disease

**Charles Wesley Larkins**, Cincinnati, Eclectic Medical College, Cincinnati, 1918, advisory member of Selective Service Board number 29, Westwood, past president of the Westwood Athletic Club, died in the Bethesda Hospital August 28, aged 54, of hypertension

**Charles Buchanan Law**, Mineral Wells, Texas, Memphis (Tenn.) Hospital Medical College, 1913, served during World War I, died in the Nazareth Hospital August 24, aged 59, of coronary disease

**Charles Leali**, Kingsland, Ark., Missouri Medical College St. Louis, 1882, died July 29, aged 84

**Harry Hamilton Lewis**, Louisville, Ky., University of Louisville Medical Department, 1890, died August 7, aged 75, of carcinoma and arteriosclerosis

**Charles Day Lipscomb**, Quitman, Texas, Medical Department of Tulane University of Louisiana, New Orleans, 1902, served as health officer of Wood County, died in August, aged 77

**Clifford Athenus Lutgen** ♂ Auburn, Neb., Lincoln Medical College of Cotner University, 1901, president of the Nemaha County Medical Society in 1936, president of the Nebraska Hospital Association in 1940, for many years a member of the city library board, member of the chamber of commerce, past president and charter member of the Auburn Kiwanis Club, medical director and owner of the Auburn Hospital, died August 15, aged 70, of virus pneumonia

**Will R. McCamy**, Knoxville, Tenn., Chattanooga Medical College, 1901, member of the Tennessee State Medical Association, died August 6, aged 66, of pneumonia

**Joseph Hamilton McLeskey**, Charlotte, N. C., University of Georgia Medical Department, Augusta, 1909, member of the Medical Society of the State of North Carolina, on the staffs of the Mercy and Presbyterian hospitals, died in Clemson College, S. C., August 4, aged 59, of coronary thrombosis

**Frederick Henry Martin**, Libertyville, Ill., the Hahnemann Medical College and Hospital, Chicago, 1899, a captain in the medical corps of the U. S. Army during World War I, died in the Veterans Administration Facility, Downey, August 18, aged 71, of chronic myocarditis and arteriosclerosis

**Paul Dickinson Maxwell**, Utica, N. Y., Syracuse University College of Medicine, 1938, member of the Medical Society of the State of New York, on the staff of the Rome State Hospital, died August 21, aged 31, of cerebral thrombosis

**Arthur S. Monzingo** ♂ Gig Harbor, Wash., Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1905, superintendent and owner of the Gig Harbor Hospital, where he died August 21, aged 66, of coronary thrombosis

**Charles Emory Morse** ♂ La Junta, Colo., Denver and Gross College of Medicine, 1909, president of the staff of Menomonee Hospital, died August 16, aged 63, of coronary thrombosis

**Edwin Smith Moss**, Williamsburg, Ky., Hospital College of Medicine, Louisville, 1881, member of the Kentucky State Medical Association, president of the First National Bank for thirty-five years, for fifty years served as medical referee for Whitley County, chairman of the county board of health, for many years local surgeon for the Louisville and Nashville Railroad, died August 23, aged 83, of senility

**John J. Moylan**, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1882, for many years chief of staff of St. Mary's Hospital, on the staffs of the Germantown Dispensary and Hospital and St. Joseph's Hospital, attending physician at the Little Sisters of the Poor Home for the Aged and the House of Good Shepherd, died August 2, aged 85

**Ralph Lyle Oppen**, O'Neill, Neb., University of Nebraska College of Medicine, Omaha, 1940, appointed a first lieutenant in the medical corps of the National Guard on Dec. 23, 1940, assigned to the medical detachment, 134th Infantry, Camp Joseph T. Robinson, Arkansas, on Feb. 1, 1942 appointed a captain in the medical corps, Army of the United States, honorably discharged, May 5, 1943 because of physical disqualification, died August 6, aged 33, of cardiac decompensation

**John Thomas Pattison**, Langley, S. C., University of Georgia Medical Department, Augusta, 1890, died in a hospital at Anderson August 19, aged 73

**Charles Elvie Peel**, Watseka, Ill., Barnes Medical College, St. Louis, 1906, formerly physician for the Illinois Central Railroad, died August 25, aged 74, of coronary thrombosis and bronchial asthma

**William Waldo Rambo** ♂ Jefferson City, Mo., Washington University School of Medicine, St. Louis, 1926, for many years physician and surgeon for the Missouri State Penitentiary, died August 9, aged 50, of cerebral hemorrhage

**George Lawrence Ramsey**, Powhattan Point, Ohio, Ohio Medical University, Columbus, 1898, member of the Ohio State Medical Association, for many years president of the board of education, died in the City Hospital, Bellaire, August 29, aged 71

**Edgar Thomas Ray**, New York, Columbia University College of Physicians and Surgeons, New York, 1906, chief medical officer of the city of New York fire department, served during World War I, died in Brooklyn August 27, aged 63



Matthew Simpson Reay, Randolph, Utah, College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois, 1903, member of the Utah State Medical Association, member of the county Selective Service Board during World War I and II died in the Caribou County Hospital, Soda Springs, Idaho, August 6, aged 63

Edward Clifton Rinehart & Struthers, Ohio, Ohio State University College of Medicine, Columbus 1913 died in the Youngstown Hospital, North Side Unit, August 29, aged 56, of heart disease.

Isaac Burton Roberts, Llanerch Pa University of Pennsylvania Department of Medicine Philadelphia 1897, member of the Medical Society of the State of Pennsylvania, served overseas during World War I, school doctor in Haverford township for many years and adviser to the board of health member of the staff of the Delaware County Hospital, Drexel Hill, where he died August 29, aged 68 of injuries received when the automobile in which he was driving was struck by a trolley car

John William Rockefeller, Loch Arbour, N J College of Physicians and Surgeons, New York, 1890 died August 22, aged 73, of chronic myocarditis and intestinal neoplasm

Holbert A Rogers, Jeffersonville, Ga Atlanta College of Physicians and Surgeons, 1909, died in the State Tuberculosis Sanatorium, Alto, August 7, aged 59 of tuberculosis

Melville Erskine Rummell, Palo Alto Calif, Cooper Medical College, San Francisco, 1895 formerly associate clinical professor of surgery at the Stanford University School of Medicine, one of the first appointees on the board of the state industrial accident commission and for many years served with the state compensation insurance fund, formerly visiting physician at the Crocker Home and medical director of the Olympic Club died August 3, aged 70

Charles T Schrader, Bristow, Okla Hospital College of Medicine, Louisville, Ky, 1905, member of the Oklahoma State Medical Association mayor of Bristow for three terms, on the staff of the Cowart-Sisler Hospital died August 27, aged 64 of angina pectoris

Edwin Forrest Sibley & Kingston, N Y Albany Medical College, 1903, served in the medical corps of the U S Army during World War I on the staffs of Benedictine Hospital and the Kingston Hospital, died in the Albany Hospital August 24 aged 64, of general arteriosclerosis and coronary sclerosis

Hans Eugen Simmel, Warren, Ohio, Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin Prussia Germany, 1914, on the staff of the Warren City Hospital died in Colorado Springs, Colo, August 23 aged 52, of peritonitis

Emery Singer, Avenel, N J University of Kolozsvár, Hungary, 1911, died in the General Hospital Perth Amboy August 23 aged 57 of coronary thrombosis

R B Slater, Craig, Colo, St. Louis College of Physicians and Surgeons 1921, also a pharmacist, secretary of the school board, on the staff of the Solandt Memorial Hospital Hayden, died in Jackson, Wyo, August 13, aged 52, of coronary thrombosis

Harry Wilbur Smith, Norridgewock Maine Dartmouth Medical School, Hanover, N H, 1900 member of the Maine Medical Association school physician library trustee a member of the town advisory committee, on the staff of the Redington Memorial Hospital, Skowhegan, died August 19, aged 73 of cerebral hemorrhage.

Francis George Speidel & Washington D C George Washington University School of Medicine Washington 1917 served in the U S Navy during World War I member of the staffs of the George Washington University Doctors Eastern Dispensary and Casualty, Childrens and the Central Dispensary and Emergency hospitals died in Richmond Va, August 30, aged 51 of acute myocarditis

Sam Houston Spruiell, Gouldbusk, Texas University of Texas School of Medicine Galveston 1907 died August 27 aged 66 of chronic myocarditis and chronic nephritis

Zella White Stewart, Iowa City Cornell University Medical College New York 1904 member of the American Association for the Study of Allergy died August 4 aged 65 of cerebral hemorrhage and hypertension.

Alexander Williamson Stirling, Baldwin Ga M B University of Edinburgh Faculty of Medicine Scotland 1880 and M D in 1887, member of the Medical Association of Georgia fellow of the American College of Surgeons formerly on the staffs of the Wesley Memorial Hospital Presbyterian Hospital and Tabernacle Infirmary Atlanta died August 16 aged 85

Bernhardt Kurt Stumberg St Charles Mo Maryland Medical College Baltimore, 1900, member of the Missouri

State Medical Association, veteran of the Spanish American War and World War I, on the staff of St Joseph's Hospital medical director of the Lindenwood College, died August 20 aged 67, of coronary occlusion

John Samuel Talley, Troutmans, N C, University of North Carolina School of Medicine, Raleigh, 1909, member of the Medical Society of the State of North Carolina, past president and vice president of the Iredell-Alexander Counties Medical Society, died in the Davis Hospital, Statesville, August 4, aged 63, of coronary occlusion

Daniel Herman Tellman & Passaic, N J, Columbia University College of Physicians and Surgeons New York, 1923, on the staff of the Beth Israel Hospital died in the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, August 26, aged 41, of acute leukemia

Albert S Thompson & Mount Horeb, Wis, Minneapolis College of Physicians and Surgeons, 1902 for many years local health officer died in the Methodist Hospital, Madison, August 28, aged 65, of coronary thrombosis

Charles Urban Thralls, Hymers, Ind, Illinois Medical College, Chicago, 1903, member of the Indiana State Medical Association, on the staff of St Anthony's Hospital, Terre Haute, died August 23, aged 64, of Hodgkin's disease.

Richard E Timberlake, Youngsville, N C, Jefferson Medical College of Philadelphia, 1908, examiner for several insurance companies, died August 10, aged 64, of cerebral hemorrhage

William S Tyson, New Boston, Texas University of Nashville (Tenn) Medical Department, 1908, for several terms served as health officer of Bowie County, died recently, aged 57, of heart disease.

George King Wassell, Dallas, Texas, Northwestern University Medical School, Chicago, 1935 member of the State Medical Association of Texas, instructor in surgery at the University of Michigan Medical School, Ann Arbor, from 1936 to 1938 assistant in clinical surgery at Baylor University College of Medicine from 1938 to 1943, assistant in clinical surgery at the Southwestern Medical Foundation School of Medicine dispensary surgeon, Baylor Hospital, died August 31, aged 33, of heart disease

Walter Walton Watson, Philadelphia, Medico-Chirurgical College of Philadelphia, 1900, member of the Medical Society of the State of Pennsylvania, died August 13 aged 69

Moses Weiss, New York Deutsche Universität Medizinische Fakultät, Prague, Czechoslovakia, 1927, member of the Medical Society of the State of New York, formerly president of the Balneological Society of Saratoga Springs, died in the New England Baptist Hospital, Boston August 8, aged 41, of recurrent carcinoma of the cecum with generalized metastases

Arthur Henry Wilson, Indianapolis Indiana Medical College School of Medicine of Purdue University, Indianapolis, 1907, served with the American Expeditionary Forces during World War I, lieutenant colonel in the medical reserve corps of the U S Army not on active duty died August 3, aged 67, of hypertension.

James T Windell, Louisville, Ky University of Louisville Medical Department, 1892 member of the American Urological Association died August 8, aged 78, of carcinoma

## DIED WHILE IN MILITARY SERVICE

Robert Carl Badertscher, Bloomington, Ind Indiana University School of Medicine, Indianapolis 1940 member of the Indiana State Medical Association, commissioned a first lieutenant in the medical reserve corps of the U S Army on June 30, 1940 beginning extended active duty on July 2 1941 commissioned a captain flight surgeon with the second photographic charting squadron, died at Iquitos Peru, in an airplane crash September 6 aged 27

Eugene Winston Matlock & Port Arthur Texas University of Texas School of Medicine, Galveston 1922 past president of the Jefferson County Medical Society fellow of the American College of Surgeons member of the surgical staff at St. Mary's Hospital, began extended active duty as a lieutenant commander in the medical corps of the U S Naval Reserve Sept 7, 1942 formerly stationed at the U S Naval Hospital at Corpus Christi and the U S Naval Training School at Norman Okla died in an airplane crash near Madisonville Feb 16 1943 aged 43



## Correspondence

### UNILATERAL NEPHRECTOMY AND HYPERTENSION

To the Editor—In THE JOURNAL, October 2, page 277, Weiss and Chasis rightfully infer from the failure of the removal of a chronic atrophic pyelonephritic kidney to lower the blood pressure of a patient with hypertension that the diseased kidney probably was not causally related to the hypertension. From the fact that the other kidney showed normal blood flow, glomerular filtration rate and maximal tubular excretory capacity, however, they conclude that the remaining kidney was not diseased or ischemic and therefore not responsible for the hypertension. That the remaining kidney was not ischemic is obvious, but that it "cannot be indicted for this failure" [of the nephrectomy to reduce the blood pressure in the patient] is not necessarily true.

The mechanism whereby constriction of the renal artery produces hypertension in experimental animals is still unsettled. Although a reduction in pulse pressure may be involved (Kohlstadt, K G, and Page, I H. Liberation of Renin by Perfusion of Kidneys Following Reduction of Pulse Pressure, *J Exper Med* 72 201 [Aug] 1940), local anoxia appears not to be (Marienfeld, C J, and Wakerlin, G E. The Effect of Sodium Cyanide on the Formation of the Pressor Substance of the Completely Ischemic Kidney, *Fed Proc* 2 32 [March 16] 1943). The evidence for increased liberation of renin into the circulation is suggestive but inconclusive (Page, I H. Demonstration of the Liberation of Renin Into the Blood Stream from Kidneys of Animals Made Hypertensive by Cellophane Perinephritis, *Am J Physiol* 130 22 [July] 1940. Dell-oro, R, and Braun-Menendez, E. Dosaje de renina en la sangre de perros hipertensos por isquemia renal, *Rev Soc argent de biol* 18 65 [May] 1942), and the opposite view of a reduction in a postulated normal antipressor activity of the kidney has recently been stressed (Grollman, Arthur, and Rule, Colter. Experimentally Induced Hypertension in Parabiologic Rats, *Am J Physiol* 138 537 [March] 1943. Grollman, Arthur, Harrison, T R, and Williams, J R, Jr. Experimental Renal Hypertension in the Rat, *ibid* 139 293 [June] 1943). In any event renal ischemia is not necessary, as was formerly thought. Thus there is excellent evidence that experimental renal hypertension can occur with normal renal blood flow, glomerular filtration and maximal tubular excretory capacity (Corcoran, A C, and Page, I H. Renal Blood Flow in Experimental Renal Hypertension, *Am J Physiol* 135 361 [Jan] 1942).

Moreover, recently moderate hypertension developed in 4 of our dogs following bilateral constriction of the renal arteries (Wakerlin, G E, Moss, W G, and Goldberg, M L. Unpublished observations). Six to twelve months later one kidney was of normal or near normal size whereas the other was approximately two-thirds normal size. On the theory that the normal sized kidney was not contributing to the hypertension and possibly even exerting an antihypertensive effect, the larger kidney was removed in an effort to obtain a more pronounced hypertension. In each dog the blood pressure fell to a persistent near normotensive level. Other observations in our laboratory also point to the probability that a kidney which is rendered ischemic by renal artery constriction is less effective in producing a high level of chronic or benign (in contrast to malignant) experimental hypertension than one which maintains a normal or near normal blood flow after constriction.

The fact that unilateral nephrectomy has been successful in reducing the elevated blood pressure to normal in only 7 of 76 patients as quoted by Weiss and Chasis is not evidence against the possible involvement of the kidney directly or indirectly in the pathogenesis of essential hypertension but rather against the premature and sometimes misinterpreted application of incomplete laboratory results to pressing clinical problems. On the other hand, the numerous similarities between essential hypertension and experimental renal hypertension do not prove even a partial common pathogenesis. Only future work can determine whether essential hypertension is a generic classification, one group of which may be of renal origin.

Consequently, although the hypertension in the case reported by Weiss and Chasis may well not be on a renal basis, this possibility is not ruled out when the evidence presented is viewed in the light of recent experimental findings.

GEORGE E WAKERLIN, M D, Chicago

Professor and Head, Department of Physiology,  
Chicago Colleges, University of Illinois

### DIPHTHERIA MORTALITY—TYPHOID CARRIERS—POLIOMYELITIS IN PREGNANCY

To the Editor—This is to commend you on the excellent editorial on "Diphtheria Mortality in the United States."

You call attention to the fact that Dr J C Geiger of San Francisco has noticed a recent increase in deaths from diphtheria in older age groups. I thought you would be interested to know that during this year, to date, out of seven deaths from diphtheria in Los Angeles five were of persons over 40 years of age. As there were 13 patients over 40 years of age this makes a specific mortality rate of 38 per cent. During 1942 there were 27 patients over 40 years of age with diphtheria and seven deaths, or a specific mortality rate of 26 per cent. It would seem that diphtheria is being overlooked in the older age groups.

It may also interest you to know that 9 of the last 10 typhoid carriers discovered by our investigator are grandmothers.

It is noted in the September 25 issue of THE JOURNAL that Drs Harmon and Hoyne reported 2 cases of poliomyelitis complicating pregnancy. It is interesting that the symptoms given in both of these cases point to bulbar poliomyelitis. Of 4 pregnant women admitted to the Los Angeles County General Hospital with poliomyelitis during the last few months, 3 had bulbar poliomyelitis, 2 of whom died. Both of the latter 2 delivered normal children before they died.

GEORGE M UHL, M D, Los Angeles

Health Officer

### VINCENT'S ANGINA OF THE TONSIL

To the Editor—In reference to a report (THE JOURNAL, October 9, p 341) titled "Treatment of Vincent's Angina of the Tonsil," Major C S Linton treats the gingival margins in the following manner: "When infection also was present about the gum margins, it was advised that the sulfathiazole tablet be moistened with a few drops of water to make a paste and this used to rub into the gum margins." In this preliminary report it is stated that the author in his search of the literature failed to find any use of sulfonamide drugs for this purpose. He also indicates that Spink in his book reports that sulfanilamides have been used in the treatment of Vincent's angina with no benefit from local administration.

May I call to your attention the fact that I reported beneficial results in June 1942 (Sulfa Drugs in Local Treatment of Necrotic Gingivitis [Vincent's infection] *New York Journal of Dentistry* 12 251 [June] 1942) I also reported them in Miller's Textbook of Periodontia (ed 2, Philadelphia Blakiston Company, 1943 chapter XVII) In both of these publications I indicated the use of a sulfonamide paste.

WILLIAM M GREENHUT, DDS New York.  
Assistant Professor of Periodontia, New  
York University College of Dentistry

## STERNAL TRANSFUSIONS IN BURNS

To the Editor—This communication is prompted by a quotation printed on page 815 of the July 17 issue of THE JOURNAL. The quotation is taken from a pamphlet entitled "Treatment of Burns and Prevention of Wound Infections" published by the Medical Division of the Office of Civilian Defense. In a discussion of the technique of administering plasma we are told that "it must never be administered by any other than the intravenous route."

The published reports on infusions via the bone marrow of Tocantins and O'Neill (THE JOURNAL, Oct 11 1941) and of Doud (*ibid*, Dec 12, 1942) testify to the feasibility of the bone marrow route for infusions of blood, plasma dextrose or saline



Administration of plasma through infusion needle into bone marrow of sternum.

solution. This point bears emphasis because it is in just such cases of severe burns that superficial veins are apt to be either completely collapsed or involved in the burned area. Sternal bone marrow infusion presents an alternative route for fluid therapy. Plasma in such instances is life saving and in that marrow infusion makes it available marrow infusion is life saving.

The procedure of sternal marrow infusion seems to be little known. Experience with it in war casualties has demonstrated its value and simplicity. The pamphlet quoted emphasizes the need for a rapid flow of a plasma infusion on occasion. A sternal infusion flows at a rate comparable to an intravenous infusion. The accompanying photograph illustrates our use of the procedure during the recent New Georgia campaign. The patient is a wounded Japanese prisoner.

SAMUEL L. LIEBERMAN  
First Lieutenant M. C. A. U. S.

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Nov 6 page 655

#### BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery, June 20 22 Sec. Dr. B. F. Austio, 519 Dexter Ave. Montgomery

CALIFORNIA *Written* San Francisco Nov 16 18 Sec. Dr. Frederick M. Scatena 1020 N. St. Sacramento

CONNECTICUT \* *Endorsement* New Haven Nov 23 Sec. to the Board Dr. Creighton Barker 258 Church St. New Haven

DELAWARE *Written* Dover Jan 11 13 *Endorsement* Dover Jan 18 Sec. Medical Council of Delaware Dr. Joseph S. McDaniel 229 S. State St. Dover

FLORIDA \* Jacksonville, Nov 22 23 Sec. Dr. William M. Rowlett, Box 786 Tampa

IDaho Boise Jan 11 Dir. Bureau of Occupational Licenses Mrs. Lela D. Painter 355 State Capitol Bldg. Boise

IOWA \* Iowa City Dec. 27 29 Dir. Division of Licensure and Registration, Mr. H. W. Grefe Capitol Bldg. Des Moines

KANSAS Kansas City Feb 2 3 Sec. Board of Medical Registration and Examination, Dr. J. F. Hassig 905 N. Seventh St. Kansas City

KENTUCKY Louisville Dec. 6-8 Sec. State Board of Health Dr. Philip E. Blackerby 620 S. Third St. Louisville

LOUISIANA New Orleans Dec. 21 23 Sec. Dr. R. B. Harrison 1507 Hibernia Bank Bldg. New Orleans

MARYLAND *Medical* Baltimore Dec. 14 17 Sec. Dr. J. T. O'Mara 1215 Cathedral St. Baltimore *Homeopathic* Baltimore Dec 14 15 Sec. Dr. J. A. Evans 612 W. 40th St. Baltimore

MASSACHUSETTS Boston Nov 16-19 Sec. Board of Registration in Medicine Dr. H. Q. Gallupe 413 F. State House Boston

MISSOURI St. Louis Nov 15 17 Sec. State Board of Health Dr. James Stewart State Capitol Bldg. Jefferson City

NEW HAMPSHIRE Concord March 9 10 Sec. Board of Registration in Medicine, Dr. D. G. Smith State House Concord

NEW JERSEY Feb 15 16 Sec. Dr. E. S. Hallinger 28 W. State St. Trenton

NEW YORK Albany New York Buffalo and Syracuse Jan. 24 27 Sec. Dr. R. R. Hannon Education Bldg. Albany

NORTH CAROLINA December Sec. Dr. W. D. James Hamlet.

NORTH DAKOTA Grand Forks Jan 4 7 Sec. Dr. G. M. Williamson 4 1/2 S. Third St., Grand Forks

OHIO *Written* Columbus Dec. 13 15 Sec. Dr. H. M. Platter 21 W. Broad St. Columbus.

OKLAHOMA \* Oklahoma City, Dec 27 29 Sec. Dr. J. D. Osborn Jr. Frederick

PENNSYLVANIA Philadelphia and Pittsburgh January Act See Bureau of Professional Licensing Department of Public Instruction Mrs. Marguerite G. Steiner 358 Education Bldg. Harrisburg

SOUTH CAROLINA Charleston Dec. 20 22 Sec. Dr. A. B. Heyward 1329 Blanding St. Columbia.

SOUTH DAKOTA \* Pierre Jan 18 19 Dir. Medical Licensure State Board of Health Dr. Gilbert Cottam Pierre

VERMONT Burlington Dec. 16 18 Sec. Dr. F. J. Lawliss Richford.

VIRGINIA Richmond Dec. 14 17 Sec. Dr. J. W. Preston 30 1/2 Franklin Road Roanoke.

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\* Basic Science Certificate required.

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## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Medical Practice Acts Right of Osteopath to Perform Minor Surgery**—Thierfelder, who was licensed to practice osteopathy in Montana, was charged in a criminal information with practicing medicine without a license in that on a stated day he performed a tonsillectomy on a stated patient. The trial court held, apparently, that the osteopath was not guilty of practicing medicine without a license, since a licensed osteopath could legally perform a tonsillectomy in Montana, and directed the jury to return a verdict in the osteopath's favor. The state then appealed to the Supreme Court of Montana.

A section of the Montana osteopathic practice act enacted in 1901 (Laws 1901, p 50, sec 6) read, in part, as follows:

The certificate provided for in Section five of this Act shall not authorize the holder thereof to prescribe drugs in the practice of osteopathy, for (or) to perform major or operative surgery. And any person holding certificate under this Act, who shall prescribe or use drugs in the practice of osteopathy, or who shall perform major, *minor* or operative surgery, shall be deemed guilty of a misdemeanor, provided that nothing in this Act shall be so construed as to prohibit any legalized osteopath in this State from practicing major or operative surgery after having passed a satisfactory examination in surgery before the State Board of Medical Examiners of the State of Montana.

In 1905 (Laws 1905, page 109) this section was amended by deleting or omitting the word "minor" italicized above. The osteopath contended that the legislature by omitting "minor" in the 1905 amendment clearly intended to permit osteopaths to practice minor surgery, impliedly arguing, of course, that the performance of a tonsillectomy was minor surgery. The Supreme Court, however, refused to adopt such logic. The omission of "minor," said the court, in the 1905 amendment was obviously done to clarify the section and to make it uniform wherever it referred to operative surgery. According to all medical authorities "operative surgery" includes both major and minor surgery and we have no doubt the legislative assembly believed the term "minor" was superfluous.

In 1907 the section of the medical practice act, in effect, defining the practice of medicine was amended (Laws 1907, chapter 101) by adding the following proviso:

Provided, however, that nothing in this section shall be construed to restrain or restrict any legally licensed osteopathic practitioner practicing under the laws of this state.

The osteopath apparently contended that the effect of this proviso was to render the provisions of the medical practice act inapplicable to the activities carried on by a legally licensed osteopath. The Supreme Court, however, did not believe that the proviso adopted in 1907 in any way broadened the power of licensed osteopathic practitioners. In support of its holding it quoted from its prior decision in *State v Dodd*, decided in 1915, and reported in 149 P 481, reading in part, as follows:

Counsel for appellant insists that the effect of that section, with the proviso quoted [referring to the proviso under discussion here], is to deny to every person, except osteopaths, the right to practice medicine or surgery in Montana, and that, in excepting osteopaths from the operation of its provisions, those persons thus favored are free to engage in the practice of medicine and surgery without having to submit to the ordeal of an examination and without having the certificate required of every other one who seeks to engage in like practice.

The proviso in section 1591 [referring to the proviso under discussion here] is a harmless piece of legislation. It did not affect the status of osteopathic practitioners in the least. They were confined thereafter, as theretofore, to the practice of osteopathy and forbidden to practice medicine or surgery without the certificate from the state board of medical examiners required of everyone who seeks to engage in such practice.

[The section of the osteopathic practice act defining osteopathy provides] "Every person shall be deemed practicing osteopathy within the meaning of this act who shall, treat, cure, alleviate or relieve any ailment or disease of either mind or body, or cure or relieve any fracture or misplacement or abnormal condition, or bodily injury or deformity, by any treatment, or manipulation or method of manipulating a human body or any of its limbs, muscles or parts, by the use of the hands, or mechanical appliances, in an effort or attempt to relieve any pressure, obstruction, misplacement or defect, in any bone, muscle, ligament, nerve, vessel, organ or part of the body. Within the entire scope of his practice, the osteopath is confined to treatment by the use of the hands or mechanical appliances."

The court then quoted from *State v Wood*, 165 P 592, as follows:

In *State v Dodd* [citation omitted], we considered these statutes at length and concluded that the practice of medicine and surgery does not include the practice of osteopathy, and that the practice of osteopathy does not include the practice of medicine or surgery, that the Legislature has grouped all persons practicing the healing art into two distinct classes, (1) physicians and surgeons, and (2) osteopathic practitioners and that the so called proviso added to section 1591 above [referring to the proviso discussed in this case] "did not affect the status of osteopathic practitioners in the least. They were confined thereafter, as theretofore, to the practice of osteopathy and forbidden to practice medicine or surgery without the certificate from the state board of medical examiners required of everyone who seeks to engage in such practice." We are more than ever confirmed in the correctness of those conclusions. The so called proviso found in section 1591 [referring to the proviso quoted in this case], and the like provision in section 1605b [referring apparently to the section of the osteopathic practice act stating the scope of the license to practice osteopathy], were doubtless enacted out of abundance of caution and to emphasize the legislative intention that neither school of practice should be held to infringe upon the other.

The attorney general, continued the Supreme Court, the attorney who appeared as amicus curiae in the argument of this case before this court and this court itself are in accord on the propositions that operative surgery includes all surgery and that the omission of the word "minor" in the 1905 amendment to the osteopathic practice act does not authorize osteopaths to perform surgery of any kind, either minor or major. We think it is clear that osteopaths have no right to perform surgical operations on human beings unless they are licensed to do so by the state board of medical examiners.

The osteopath next contended that if he was guilty of any offense at all it was that of practicing surgery without a license, whereas he was charged in the information with practicing medicine without a license. The practice of medicine and the practice of surgery, answered the court, are considered as one under our statutes and under long acceptance by people generally, and there is no authority that we have found to justify any different notion about what practicing medicine means. Surgery is described by various authorities as follows:

"That branch of medical science, art, and practice, which is concerned with the correction of deformities and defects, the repair of injuries and diagnosis and cure of disease, the relief of suffering and the prolongation of life, by manual and instrumental operations." *Webster's New International Dictionary*.

"There cannot be a complete separation between the practice of medicine and surgery, as they are developed by modern science, and understood by the most learned in the two professions, the principles of both are the same throughout, and no one is qualified to practice either who does not properly understand the fundamental principles of both." *2 Bouv. Law Dict., Rawle's Third Revision* p 209.

"Therapy of a distinctively operative kind, such as cutting operations." *Century Dictionary and Cyclopedia*.

"The art, practice, or work of treating diseases, injuries, or deformities by manual operation or mechanical appliances, the branch of medicine that is concerned with such treatment." *New Century Dictionary*.

"The branch of healing art that resorts to manual operations or mechanical appliances for the treatment of injuries, deformities or internal morbid conditions." *Standard Dictionary*.

The judgment of the trial court in favor of the defendant osteopath was accordingly reversed and a new trial was ordered.—*State v Thierfelder*, 132 P (2d) 1035 (Mont, 1943).

## Society Proceedings

### COMING MEETINGS

- American Society of Anesthetists, New York Dec 9 Dr McKinnin L. Phelps, 745 Fifth Ave., New York 22, Acting Secretary
- American Society of Tropical Medicine, Cincinnati, Nov 16-18 Dr J S D'Antoni, 1430 Tulane Ave., New Orleans, 13, Secretary
- American Therapeutic Society, Cincinnati, Nov 15 Dr Oscar B Hunter, 1835 Eye St. N W, Washington, D C, Secretary
- Annual Conference of Secretaries and Editors of Constituent State Medical Associations, Chicago, Nov 19-20 Dr Olin West, 535 North Dearborn St., Chicago 10, Secretary
- Association for Research in Nervous and Mental Diseases, New York, Dec 17-18 Dr Thomas E. Bamford Jr, 115 East 82d St., New York 28, Secretary
- Eastern Section, American Federation for Clinical Research, New York, Dec 4 Dr Charles H. Wheeler, 345 East 68th St., New York, Acting Secretary
- Radiological Society of North America, Chicago, Nov 29-Dec 3 Dr Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N Y, Secretary
- Seaboard Medical Association, Richmond, Va., Nov 30-Dec 2 Dr Clarence P. Jones, 3117 West Avenue, Newport News Va, Secretary
- Society for the Study of Asthma and Allied Conditions, New York, Dec 4 Dr W C Spain, 116 East 53d St., New York, Secretary
- Southern Surgical Association, New Orleans, Dec 7-9 Dr Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary
- Southern Medical Association, Cincinnati, November 16-18 Mr C P Loran, Empire Building, Birmingham, Alabama, Secretary

## Current Medical Literature

### AMERICAN

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Titles marked with an asterisk (\*) are abstracted below.

#### American Heart Journal, St. Louis

26 147-290 (Aug) 1943

\*Glucose Deficiency as Factor in Production of Symptoms Referable to Cardiovascular System. T. R. Harrison and R. M. Finks—p. 147. Effect on Man of Potassium Administration in Relation to Digitalis Glycosides, with Special Reference to Blood Serum Potassium. Electrocardiogram and Ectopic Beats. J. J. Sampson, E. C. Alberton and B. Kondo—p. 164.

\*Embolism and Secondary Thrombosis of Bifurcation of Aorta. A. Coronary Occlusion with Endomyocardial Infarction. B. Mitral Stenosis with Atrial Fibrillation. G. R. Herrmann, J. G. Willis, W. F. McKinley and L. Karotkin—p. 180. Electrocardiographic Changes During Pneumoencephalography. M. W. Bick and B. S. Epstein—p. 200.

\*Variation in Circulatory and Respiratory Responses to Carotid Sinus Stimulation in Man. M. Goldston, R. Goldstein and J. M. Steele—p. 213.

Effect of High Protein Diet and Urea Administration on Blood Pressure of Normal Dogs and of Dogs with Experimental Renal Hypertension. J. L. Guerrant, J. K. Scott and J. E. Wood Jr—p. 232.

Cardiac Complications in Acute Glomerulonephritis. H. M. Odel and W. S. Tinney—p. 239.

Pressor Action of Paredrine. Further Observations. A. Iglaier and W. E. Mollé—p. 247.

Electrocardiographic Manifestations of Early Acute Cor Pulmonale. C. H. Scheffey and T. J. Dry—p. 264.

Coronary Thrombosis and Myocardial Infarction in Youth. Report of Case with Autopsy, in 19 Year Old Male. L. Zacks—p. 269.

**Dextrose Deficiency and Cardiovascular Symptoms.**—Harrison and Finks emphasize the relationship of certain disturbances of cardiovascular function to a metabolic disorder characterized by the following features: (1) The symptoms practically always occur two or more hours after meals, (2) they can usually be reproduced by the injection of insulin, (3) they can be relieved by the ingestion of dextrose and—in large measure—prevented by dietary regulation and (4) at the time the symptoms occur the level of the blood sugar is usually either slightly subnormal or within the lower limits of the normal range. The disturbance of carbohydrate metabolism which is responsible for these symptoms has been designated as "relative hypoglycemia." It is a common factor in the production of symptoms referable to the circulatory system and has been found in 31 of the latest 204 patients with cardiovascular complaints seen by the authors. Relative hypoglycemia may produce manifestations identical with those observed in patients with cardiac neurosis. The two conditions are difficult to differentiate and they frequently coexist. Relative hypoglycemia may be a "trigger" factor in precipitating various arrhythmias (including paroxysmal tachycardia) as well as attacks of angina pectoris, hypertensive encephalopathy, carotid sinus syncope and circulatory disturbances associated with the menopause. Relative hypoglycemia is frequently associated with pain in the chest which is nonanginal in character. Occasionally in patients with typical effort angina it induces attacks of angina pectoris at rest. The circulatory manifestations of relative hypoglycemia are the same as those observed after the experimental or therapeutic administration of insulin. They appear to be related to two mechanisms: release of epinephrine and alterations comparable to those which occur in anoxia. The increased venous return so brought about causes an augmented cardiac output and the typical signs of the "overactive heart." The attempt to reproduce the symptoms in a given case by insulin administration is a more valuable diagnostic method for certain patients than the dextrose tolerance test. Both methods are less important than the history. When relative hypoglycemia is causing symptoms benefit can usually be obtained by the use of a diet which is poor in carbohydrates

and rich in protein, with intermediate feedings. Observation of the response to such a diet is therefore at times a helpful diagnostic measure.

**Embolism and Secondary Thrombosis of Bifurcation of Aorta.**—Herrmann and his collaborators report 5 cases of saddle embolus at the bifurcation of the aorta, with one recovery, and necropsy studies in 3 cases. The first 2 patients were elderly men with hypertensive arteriolar disease, atherosclerosis, coronary thrombosis, endomyocardial infarction and mural thrombi. These thrombi gave rise to emboli which lodged at the bifurcation of the atherosclerotic aortas, followed by secondary thrombosis. The third patient was an elderly woman with rheumatic mitral stenosis and insufficiency, atrial fibrillation, vegetative endocarditis, hypertensive arteriolar disease and mural thrombi in all of the heart chambers. An embolus, probably from the left atrium, saddled the bifurcation of the aorta. Arteriosclerosis of the aorta near the bifurcation apparently was responsible for massive, secondary thrombosis. The last 2 patients were younger persons with rheumatic mitral stenosis and insufficiency and atrial fibrillation. They apparently had less aortic disease and survived longer after the emboli lodged at the aortic bifurcation. Both subsequently had cerebral embolism, 1 died and 1 survived. Conservative medical treatment was practiced in all instances. Heparinization and surgical intervention would probably have been successful in some of the cases. The authors stress that patients with coronary occlusion and myocardial infarction and those with rheumatic mitral disease and auricular fibrillation or verrucous endocarditis are candidates for saddle embolism. The bifurcation of the aorta, iliacs or other great arteries are not uncommon sites for the lodgment of relatively large emboli. The secondary aortic thromboses that follow in atherosclerotic aortas are most serious. The occurrence of abdominal cramps should lead one to suspect movement of the emboli down the aorta. Sudden sharp pains in one leg and then in the other, followed by paresthesias, coldness, blanching, lowered skin temperatures and absent or greatly decreased femoral pulses, should lead one to suspect lodgment of an embolus at the bifurcation of the aorta. Oscillometric studies are confirmatory of the absence of pulsations. When the embolus is small and the obstruction incomplete, a much less clearcut clinical picture is presented. Papaverine hydrochloride in a dose of 0.032 Gm ( $\frac{3}{8}$  grain) intravenously should be started as soon after the onset as possible. Morphine is used to control the pain. Whisky should be administered freely. Passive movements, postural exercises and passive vascular exercise are to be undertaken. Lumbar sympathetic block should be produced to relieve pain and cause maximum peripheral vasodilatation. In elderly persons because of the great likelihood of secondary thrombosis, heparinization should be instituted. Heparinization followed by dicumarol may some day become a routine emergency procedure in the treatment of all cases of massive coronary thrombosis. The patients with rheumatic heart disease seem to have the best prognosis as far as saddle embolism is concerned.

**Responses to Carotid Sinus Stimulation in Man.**—Goldston and his associates review the history of research on carotid sinus stimulation, giving particular attention to the investigations of Weiss and his co-workers, who distinguished three types of syncope resulting from carotid sinus stimulation. The first, in which syncope is accompanied by definite slowing of the heart rate or asystole and a consequent fall in arterial pressure is designated the "vagal type", the second, in which a pronounced fall in arterial pressure occurs without significant slowing of the heart, the "depressor type", and the third in which there is syncope without either slowing of the heart or fall in arterial pressure, the "cerebral type". The authors studied the relationships, in point of time between changes in arterial pressure, pulse rate, venous pressure, respiration and the onset of syncope and convulsions. One hundred persons were examined, 26 of whom presented a sensitive carotid sinus reflex. Of these 17 regularly had convulsive seizures on stimulation of the carotid sinus. The common circulatory response in the 17 persons was slowing of the heart and asystole (vagal response) with a fall in arterial pressure (depressor response). A pure vagal response was next most common. A pure depressor response was not observed except when the patient was

under the influence of atropine. Paredrine hydrobromide prevented to a large degree the depressor responses. Two patients had convulsions without significant circulatory change (cerebral type). In 3 other patients syncope and convulsions persisted when circulatory changes were inhibited by the administration of atropine or paredrine. Hyperpnea is the regular respiratory response to digital pressure in the region of the carotid sinus. Its occurrence is independent of the circulatory response. It is independent of age or sex. It is not prevented by barbiturate anesthesia, but local infiltration of the region about the carotid sinus and carotid body with procaine hydrochloride abolishes it. Prolonged stimulation is often followed by a phasic type of respiration similar to Cheyne-Stokes breathing. Evidence is presented that hyperpnea after pressure on the neck in the region of the carotid sinus in man may be caused by a disturbance of the blood supply to the carotid body rather than by mechanical stimulation of the carotid sinus.

### American Journal of Public Health, New York

33 1043-1186 (Sept.) 1943

- Child as Wartime Problem R. H. Parry—p. 1043  
Laboratory Examination of Eating and Drinking Utensils R. L. France, J. E. Fuller and W. E. Cassidy—p. 1054  
Venereal Disease Epidemiology, Third Service Command Analysis of 4,641 Contact Reports E. W. Norris, A. F. Doyle and A. P. Iskrent—p. 1065  
Course of Serologic Tests During Therapeutic Malaria in Patients with Syphilis B. I. Kaplan and I. J. Brightman—p. 1073  
\*Effect of Activated Sludge Process of Sewage Treatment on Poliomyelitis Virus H. J. Carlson, G. M. Ridenour and C. F. McKhann Jr—p. 1083  
Tuberculosis Survey Among Employees of Santiago, Chile B. Viel and E. A. Jelic—p. 1088  
Public Health and Economic Aspects of Pneumonia—Comparison with Presulfonamide Years. H. E. Ungerleider, H. W. Steinhaus and R. S. Gubner—p. 1093  
Industrial Lye Health Problems H. S. Kuhn—p. 1103  
Tetanus Toxoid and Its Use for Active Immunization D. T. Fraser, D. L. MacLean, M. D. Orr, H. C. Plummer and F. O. Wishart—p. 1107  
Use of Current Birth Certificates in Planning a Maternal and Child Health Program W. C. Welling, Martha L. Clifford and E. T. Tracy—p. 1115

**Effect of Activated Sludge Process on Poliomyelitis Virus**—Carlson and his associates investigated the effect of the activated sludge process as used in municipal sewage disposal plants on the removal or inactivation of a mouse adapted strain of poliomyelitis virus. Virus suspension 1:300 was used in sludge concentrations of 1,100, 2,200 and 3,300 parts per million with aeration periods of zero, six and nine hours. The results indicate that activated sludge in amounts as low as 1,100 parts per million with six hours' aeration will remove or inactivate the virus to a sufficient extent to reduce greatly infectivity for mice injected intracerebrally. Heavier concentrations of sludge with longer aeration periods largely eliminate infectivity.

### Archives of Dermatology and Syphilology, Chicago

48 251-358 (Sept.) 1943

- Halowax Acne ("Cable Rash") Cutaneous Eruption in Marine Electricians Due to Certain Chlorinated Naphthalenes and Diphenyls C. K. Good and N. Pensky—p. 251  
Cutaneous Tests with Hen's Egg White Fractions in Atopic Infantile Eczema S. E. Ditzkowsky, R. Hecht, A. G. Cole and Belle Levin—p. 258  
Colloid Pseudomilium: Review of Its Nomenclature and Report of Case H. L. Arnold Jr—p. 262  
\*Keratoderma Climactericum (Haxthausen) Hypoestrogenic Keratoderma F. W. Lynch—p. 270  
Mosaic Fungus Cholesterol Interstitial Artefact T. Cornbleet, H. C. Schorr and H. Popper—p. 282  
Pityriasis Rubra Pilaris of Familial Type Experiences in Therapy with Carotene and Vitamin A A. L. Weiner and A. A. Levin—p. 288  
Blood Level and Excretion of Arsenic Following Single Injections of Chlorarsen H. B. Henning and R. H. Kampmeier—p. 297  
Treatment of Acne Vulgaris with Comedones by Monoterminal Electrodesiccation R. Nomland—p. 302  
Incidence of Psoriasis Among Population at Large E. Gahan—p. 305  
Changes in Finger Nails in Pulmonary Tuberculosis A. L. Banyai and A. V. Cadden—p. 306  
Yellow Dermographia V. J. Derbes and H. T. Engelhardt—p. 310

**Hypoestrogenic Keratodermitis**—Lynch describes 10 cases of hypoestrogenic keratodermitis. Microscopic changes as seen in a study of 5 specimens presented a greater degree of inflammatory reaction than was noted in the case studied by

Haxthausen. Swelling of the collagenous fibers and degeneration of the elastin were also noted. In most cases a favorable effect resulted from administration of diethylstilbestrol for as short a period as one or two weeks. To obtain a cure the treatment had to be continued for several months. It is not possible to point out clinical or microscopic features which allow differentiation of hypoestrogenic keratodermitis from neurodermatitis. It is the author's belief that the palmar and plantar eruption described by Brooke and known as keratoderma climactericum (Haxthausen) is a form of variant of neurodermatitis. The eruption is associated with a disturbed estrogenic activity in so large a proportion of cases that one is forced to regard the association as of major etiologic significance. The favorable clinical response to administration of estrogens is more striking than the occasional moderately favorable influence of these agents on the more common forms of neurodermatitis. These reasons lead Lynch to believe that the disease will be recognized more generally and treated more intelligently if such cases are described under another title rather than under the broad and frequently misunderstood term "neurodermatitis." Because the disease occurs also in women who have evidence of endocrine disorder but are not approaching or passing through the climacteric and because the term keratoderma is not acceptable to authorities on nomenclature, Lynch suggests that "hypoestrogenic keratodermitis of the palms and soles" is a more suitable title than the terms applied by Brooke or by Haxthausen.

### Canadian Medical Association Journal, Montreal

49 161-250 (Sept.) 1943

- \*Effect of Surgical Operations on Blood Pressure J. D. Adamson and Sara Dubo—p. 161  
Some Aspects of Sterility J. S. Henry—p. 167  
Fractures of Metacarpals Treated by New Method H. R. C. Norman—p. 173  
Case of Carcinoma of Nasopharynx V. de Boissiere—p. 176  
\*Radiation Treatment of Cancer of Cervix N. A. McCormick—p. 178  
Problem of Varicose Disease G. A. Holland—p. 184  
Diabetes Mellitus Associated with Addison's Disease N. W. Nic—p. 189  
Some Observations on Panama Passage W. A. Paddon—p. 191  
Epidermolysis Bullosa with Digestive Disturbances M. J. M. LaSalle—p. 194  
Indications for Drug Therapy in Heart Disease S. U. Page—p. 195  
Simplified Classification of Skin Diseases K. A. Baird—p. 200

**Effect of Surgical Operations on Blood Pressure**—Adamson and Dubo direct attention to the spontaneous, non-therapeutic, oscillation in blood pressure, because it has been frequently overlooked in judging therapeutic effects. The most recent innovation in the treatment of essential hypertension is sympathectomy. According to some reports, gratifying results have been obtained. All postoperative improvement, whether objective or subjective, is usually attributed to the specific effect of the operation. In view of the known lability of blood pressure and the effect of suggestion on symptoms, these claims demand critical examination. Volini and Flaxman have produced evidence to show that symptomatic relief and reduction in blood pressure resulting from nonspecific surgical measures, e. g. hysterectomy, prostatectomy and cholecystectomy, in the presence of essential hypertension are similar to and sometimes better than those obtained by extensive sympathectomy, splanchnic nerve section or celiac ganglionectomy. The authors determined blood pressure changes associated with major nonspecific operations and compared them with those claimed for various sympathectomy operations. The blood pressures of 208 patients before and after major operations and 28 additional patients with hypertension who were not operated on were followed during hospitalization. There was a definite reduction in blood pressure in all cases which was similar in the two groups. Alleged specific effects must be measured against known nonspecific effects which take place concurrently with all surgical operations. Careful and prolonged observation under various conditions must be made before and after sympathectomy before definite conclusions can be arrived at.

**Radiation Treatment of Cancer of Cervix**—McCormick reviews the different methods in the treatment of cervical cancer and shows that the combination of x-rays and radium is the best. He describes the technique of this treatment and reviews observations in 135 cases. He arrives at the following con-



clusions 1 Carcinoma of the ear should be treated by radiotherapeutic methods without previous surgical intervention and with as little manipulative trauma as possible 2 Roentgen irradiation must be adequate and given without thought of expense 3 This can be achieved with modern 200 kilovolt equipment, but only by the use of long skin target distances and heavy filtration 4 The roentgen irradiation is followed by radium treatment 5 The expense of the patient is comparable to that of any major surgical procedure 6 The results in all but the most hopelessly advanced cases are encouraging and superior to earlier methods of treatment 7 Patients living and apparently free from cancer at the end of three years may reasonably be expected to remain well for at least a five year period 8 Fifty per cent of patients treated as described are living normal lives five years later

### Indiana State Medical Assn. Journal, Indianapolis

36 425-534 (Sept.) 1943

- Ninth Naval District Medical Services. H. L. Dollard—p 425  
History of Organized Anesthesia in Indiana. F. T. Romberger—p 428  
Surgical Management of Perforative Appendicitis. W. C. Reed  
B. Word and C. E. Brock—p 437  
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Head Injuries Followed by Postconcussional Syndrome. L. W. Painter—p 445  
Absorption of Sulfanilamide from Burned Surfaces. M. B. Welborn—p 447

### Journal of Allergy, St. Louis

14 437-506 (Sept.) 1943

- Contact Reactions in Atopy. III. Contact Reactions in Various Atopic Illnesses. M. Albert and M. Walzer—p 437  
Electrophoretic Studies on Chemical Fractionation of Ragweed Pollen Extracts. J. M. Newell—p 444  
Volumetric Incidence of Atmospheric Allergens. I. Specific Gravity of Pollen Grains. O. C. Durham—p 455  
Effect on Sodium Potassium and Thiosulfate Ions on Anaphylaxis. R. G. Carlson and R. W. Whitehead—p 462  
Wetmann Reaction in Bronchial Asthma. Susan C. Dees with technical assistance of Susan Spell—p 469  
Dermatitis Due to Resin Finished Shorts and Fabrics. Investigation of Cause Pathogenesis and Related Phenomena Observed in 10 Cases. H. Keil—p 477  
Use of Aminophylline Rectal Suppositories in Treatment of Bronchial Asthma. Preliminary Report. Susan C. Dees—p 492  
Plasma Treatment of Severe, Near Fatal Anaphylactic Shock. A. H. Reynolds—p 499

### Journal of Aviation Medicine, St. Paul

14 157-232 (Aug.) 1943

- Study of Effects of Airplane Transportation of 200 Patients. J. H. Tillisch, J. F. Stotler and W. R. Lovelace II—p 162  
Steroid Excretion and Stress of Flying. G. Pincus and H. Hoagland—p 173  
Organ Weight Body Weight Ratios in Dogs Following Exposures to Discontinuous Anoxia. E. J. Van Liere and J. C. Stickney—p 194  
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Observations on Results of Induction of Aviation Personnel in Use of Oxygen Equipment in Low Pressure Chamber at Pensacola, Florida. H. A. Smedal—p 206  
Treatment of Aero-Otitis Media by Redecompression. H. A. Smedal, H. R. Bierman and J. L. Lilienthal Jr—p 211  
Present Trends in Teaching at Army School of Aviation Medicine. C. E. Kossmann—p 216

**Treatment of Aero-Otitis Media by Redecompression.**  
—Smedal and his associates report that of more than 10,000 individuals who have been subjected to rapid changes in barometric pressure in the low pressure chamber at the U. S. Naval Air Training Center, Pensacola, Fla., approximately 12 per cent have developed "ear block" during descent or recompression in the chamber, and many of the same group presented symptoms and signs of aero-otitis media. The precipitating event which precedes the development of aero-otitis media is an increase in the ambient pressure without compensatory ventilation of the middle ear by way of the eustachian tube. The resultant relative vacuum is responsible for the vascular hyperemia and fluid exudation within the middle ear and thus for the symptoms. The treatment by redecompression consisted of a rapid reascent in the low pressure chamber to a pressure altitude which permitted voluntary ventilation of the affected middle ear. In the individuals studied this altitude averaged 5,000 feet but varied from 3,000 to 8,000 feet. It proved necessary to urge each patient to maintain voluntary ventilation of the middle ear by frequent swallowing or a modified Valsalva

maneuver because the course of aero-otitis media was marked by periodic recurrences of reduced pressure within the middle ear and the characteristic accompaniments of pain, sense of fullness and diminished hearing acuity. In 27 of a group of 33 men with severe aero-otitis media, this form of treatment has effected immediate relief of symptoms and rapid resolution of the process. The failures occurred in patients who for any reason were unable to effect or to maintain aeration of the middle ear during and after redecompression. The simplicity of treatment by redecompression recommends its use in preference to catheterization of the eustachian tube.

### Journal of Immunology, Baltimore

47 89-180 (Aug.) 1943

- Chemistry of Pollen Extracts. II. Phosphotungstic Acid as Protein Precipitant in Standardization of Ragweed Pollen Extract. E. A. Brown and N. Benotti—p 89  
Mouse Protective Test as Uniform Method of Assay for Antibacterial and Antiviral Serums. P. A. Little—p 97  
Specificity of Antibodies to Antigens Containing Two Different Determinant Groups. F. Haurowitz and P. Schwernin—p 111  
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Immunologic Studies of Pollinosis. IV. Relationship Between Thermostable Antibody in Circulation and Clinical Immunity. Mary Hewitt Loveless—p 165

### Journal of the Mount Sinai Hospital, New York

10 341-388 (July-Aug.) 1943

- Pharmacology and Toxicology of Sulfonamides. E. P. Pick—p 343  
Retropitoneal Teratoid Tumors in Infancy and Childhood. E. E. Arnheim—p 355  
Significance of Somatic Stigmata in Childhood. R. Wagner—p 365

### Journal of Nervous and Mental Disease, New York

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- Alterations in Communicability Content of Thought and Affective Response During Irritative (Campbor) Therapy. E. Friedman—p 229  
Agranulocytosis Following Malarial Therapy in General Paresis. T. J. Heidt and G. A. Goder—p 248  
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Psychiatry and Neurology One Hundred Years and Fifty Years Ago. H. Stanka—p 294

### Journal Pharmacology & Exper Therap, Baltimore

78 321-414 (Aug.) 1943

- Blood Pressure and Respiratory Changes Produced by Strychnine Convulsions. B. E. Abreu and R. A. Woodbury—p 321  
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Influence of Low Concentrations of Cocaine on Metabolism of Phenol. Clara Torda—p 336  
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Absorption Rates of Insulin, Globin Insulin and Protamine Zinc Insulin Labeled with Radioactive Iodine. L. Reiner, E. H. Lang, J. W. Irvine, Jr., W. Peacock and R. D. Evans—p 352  
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Fate of Sulfonamides and p-Aminobenzoic Acid in Cold Blooded Animals. R. B. Failey Jr., R. C. Anderson, F. C. Henderson and K. K. Chen—p 366  
Action of Riddelline. P. N. Harris, R. C. Anderson and K. K. Chen—p 372  
Inactivation of Cholinesterase by Morphine, Dilaudid, Codeine and Desomorphine. C. I. Wright and J. C. Saline—p 375  
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Conjugation in Vitro of Phenol by Guinea Pig Liver. F. Bernheim and Mary L. C. Bernheim—p 394  
Effect of Anesthesia on Lymph Flow (Local Procaine Ether Pentobarbital Sodium). H. Polderman, Jane D. McCarrell and H. K. Beecher—p 400

## Journal of Urology, Baltimore

50 123-264 (Aug.) 1943

- Renal Ectopia Report of 2 Cases C T Rusche and J L. Bryn—p 123
- Secondary Pathologic Changes in Polycystic Kidney Disease R M Bobbitt—p 131
- Surgical Management of Acute Renal Infections J Duff, H R Kenyon and T W Hauser—p 141
- Unilateral Renal Agenesis Anatomic Description of Specimen E H Daseler and B J Anson—p 155
- Asciates Operation for Its Relief Case Report C Ferguson—p 164
- Urinary Lithiasis Review of Quarter Century of Research L D Keyser—p 169
- Bactericidal Action of Stone Dissolving Agent "Solution G" H R Sauer and E Neter—p 191
- Solution of Vesical Phosphate Calculi D J Abramson—p 197
- Metabolism of Citric Acid in Urolithiasis W W Scott, C Huggins and Bernice C Selman—p 202
- \*Total Cystectomy for Carcinoma of Bladder J T Priestley and G W Strom—p 210
- Cancer of Prostate Clinicopathologic Study of 34 Cases in Negroes W S Quinlan—p 228
- Blastomycosis of Epididymis Report of 4 Cases C E Jacobson Jr and M B Dockerty—p 237
- Mesothelioma of Epididymis and Tunica Vaginalis N Evans—p 249
- Tumors of Spermatic Cord Report of Hemangioma H A Zide—p 255
- Sodium Mandelate an Intravenous Solution Available for Therapeutic Use G Carroll and R Coleman—p 258
- Cystoscopic Radon Applicators F H Eaton—p 263

**Total Cystectomy for Carcinoma of Bladder**—Priestley and Strom reviewed the records of all cases in which total cystectomy for neoplasm was performed at the Mayo Clinic from 1910 to Aug 31, 1942 inclusive. In each of these cases a malignant lesion was demonstrated by pathologic examination of a specimen taken for biopsy prior to operation. The total number of patients operated on was 105. There were 51 patients who survived total cystectomy for carcinoma of the bladder. Of these 51 patients 26 have died since operation, 15 of these within the first postoperative year. The remainder died at intervals ranging from one to six and one-fourth years after operation. The cause of death was ascertained for 20 of this group of 26 patients. Metastasis was the cause of death of 16, whereas 4 died of renal failure. Of 13 who died because of metastasis, extension of the carcinoma beyond the bladder was noted at the time of operation. It appears unwise to perform cystectomy if the growth has extended so that its complete removal is questionable. There is a small group of patients who may die some time after operation because of pyelonephritis and its complications, but it is hoped that, as experience with ureterosigmoidostomy grows, the incidence of such renal complications will be reduced. Of the group of 51 patients who survived cystectomy, 24 are still alive and 1 could not be traced. The length of postoperative experience for this group of patients is too brief to permit an accurate estimate of ultimate survival rates. Seventeen have been operated on within the past year. Eight patients are living one to twenty-eight years after operation. Despite the comparatively high operative mortality rate associated with this procedure in years past, total cystectomy has appeared to be the only hope of cure in many cases of carcinoma of the bladder. Indications for the operation remain controversial and will be determined definitely only by more experience. Careful selection of patients and close attention to preoperative and postoperative care as well as to the fundamentals of operative technic have reduced the initial operative mortality rate to a point where total cystectomy can be considered a justifiable procedure.

## Maine Medical Association Journal, Portland

34 147-168 (Aug.) 1943

- Emergency Medical Service A W Reggio—p 147
- Dementia Precox F C Tyson—p 151

## Nebraska State Medical Journal, Lincoln

28 273-304 (Sept.) 1943

- Interpreting Paradoxical Reactions in Serology of Syphilis R L Kalin—p 276
- Psychoneuroses of War G A Young—p 280
- Should Most Gastric Ulcers Be Treated Surgically or Medically? J D Bisgard—p 285
- Traumatic Injuries of Urinary Tract Part I Straddle Injuries of the Urethra P Adams—p 288

## New England Journal of Medicine, Boston

229 309-352 (Aug 19) 1943

- \*Pulmonary Embolism Due to Quiet Venous Thromboses and Simulating Cardiac and Pulmonary Disease J Homans—p 309
- Health Examination of Adolescents J R Gallagher—p 315
- Nutritional Background of Patients with Rheumatoid Arthritis T B Bayles, H Richardson and F C Hall—p 319
- Advances in Malaria Research (concluded) Q M Goman—p 324

**Pulmonary Embolism Due to Quiet Venous Thrombosis**—Homans reports 11 cases of quiet thrombosis in the lower limb causing pulmonary embolism in ambulatory patients. Six similar cases are reported in which an old thrombophlebitis, an injury or an illness had preceded the thrombosis. Quiet thrombosis, or so-called phlebothrombosis, is a noninflammatory, reactionless process. It takes place in the deep veins of the legs, usually below the knees. The peculiar and dangerous quality of a quiet venous thrombosis lies in its decided tendency to form a loose, soft, detachable thrombus. The explanation of the lack of statistics warning the profession of the incidence of quiet thrombosis and consequent embolism lies in this, that the more silent the process the greater is the danger of embolism. A fatal pulmonary accident may come from a leg that even those most familiar with venous thrombosis must consider normal, and by contrast the great swollen leg of thrombophlebitis almost never causes embolism. The original thrombosis may pursue three courses: recovery without extension, development into phlegmasia alba dolens, and formation of a propagating thrombus with pulmonary embolism. Consideration of the cases presented shows that, since pulmonary infarction and embolism often simulate cardiac and pulmonary disease in ambulatory patients otherwise well, they must be considered in the differential diagnosis of many acute and recurrent thoracic disorders. Repeated embolism associated with quiet thrombosis is not rare, the dangerous or fatal quality of any one process is unpredictable, operative treatment to secure interruption of the thrombosed vein proximal to the source of embolism is always indicated. Conservative treatment, even if not followed by further embolism, is unlikely to prevent continuance or recurrence of the thrombosis. The use of heparin does not protect against repeated embolism and a fatal outcome.

229 353-386 (Aug 26) 1943

- \*Effect of Vitamin K<sub>1</sub> Oxide on Hypoprothrombinemia Induced by Dicumarol C S Davidson and Harriet MacDonald—p 353
- Cardiac Arrhythmias Following Pneumectomy C C Bailey and R H Betts—p 356
- Cardiac Arrhythmias Following Thoracic Surgery J H Currens, P D White and E D Churchill—p 360
- Bright's Diseases S E Bradley—p 364

**Vitamin K<sub>1</sub> Oxide in Hypoprothrombinemia Induced by Dicumarol**—Davidson and MacDonald show that dicumarol as an anticoagulant has advantages over heparin, such as activity when given by mouth and relatively low cost, but it has the serious disadvantage of lack of control. Several investigators have demonstrated that vitamin K has an action antagonistic to dicumarol. The authors were able to reverse the hypoprothrombinemia produced by dicumarol in 3 out of 4 patients by administration of large doses of vitamin K<sub>1</sub> oxide. It is probable that an inadequate amount of the vitamin was administered to the fourth patient. In 1 patient the administration of vitamin K<sub>1</sub> oxide prevented the subsequent establishment of a hypoprothrombinemia following the administration of dicumarol. The amount of vitamin K<sub>1</sub> oxide required to produce the desired effect varied considerably from patient to patient. No serious toxic manifestations were observed from the administration of large amounts of the vitamin. The only untoward action observed was transient headache and, in 1 patient, vomiting. It is suggested that the action of vitamin K<sub>1</sub> oxide in reversing the hypoprothrombinemia established by single doses of dicumarol may make the therapeutic use of this anticoagulant safer than it has been heretofore.

## New Jersey Medical Society Journal, Trenton

40 297-348 (Aug.) 1943

- Fundus Lesions in Syphilis A Rados—p 304
- Report of Death After Tonsillectomy with Recommendations Also an Outline of Simple and Rapid Method of Operation M Esther Cushnie and C H Knauer—p 311

## Oklahoma State Medical Assn Jour, Oklahoma City

36 323-368 (Aug) 1943

- Epidemic Polioencephalitis L. W. Hunt—p 323  
Plan for Use of Blood Plasma in Rural Communities A. R. Wiley—p 329  
Lower Abdominal Pain in Female C. M. Longstreth—p 330  
Recent Advances in Psychosomatic Medicine C. E. Leonard—p 334  
Epidemic Keratoconjunctivitis Summary of Recent Literature V. C. Myers—p 337

## Pennsylvania Medical Journal, Harrisburg

46 1121-1248 (Aug) 1943

- Influence of Sensitivity and Immunity on Ocular Tuberculosis A. C. Woods—p 1133  
\*Early Diagnosis of Cancer of Colon W. L. Estes Jr.—p 1139  
Elimination of Colostomy in Radical Treatment of Cancer of Large Bowel Based on Over 400 Cases W. W. Babcock and H. E. Bacon—p 1143  
Deformities of Duodenum Other Than Those Due to Ulcer J. T. Farrell Jr.—p 1149  
Hodgkin's Disease in Dermatologic and General Practice G. J. Busman and J. M. Johnston—p 1153  
What Can Be Done for Child with Beginning Deafness? D. MacFarlan—p 1157  
Differential Diagnosis of Edema of Optic Disk G. B. Gibson—p 1164  
Clinical Evaluation of Bactericidal Lamp (Gosztonyi) A. Fisher—p 1166  
Hyperchromic Anemia in Chronic Biliary Dysfunction Response to Liver Therapy M. G. Colvin—p 1168  
Infectious Mononucleosis K. M. Houser—p 1173

**Early Diagnosis of Cancer of Colon**—Estes reviewed 40 proved cases of cancer of the large intestine to ascertain some criterion whereby cancer of the colon might be suspected from its first manifestations. He found that in 85 per cent the first complaint was abdominal pain or intermittent colic associated with constipation and relieved by the passage of gas or defecation not accompanied by obvious change in stools. After it was recognized that these symptoms are suggestive of cancer of the large intestine, a particularly exhaustive investigation of patients presenting these symptoms was undertaken. As a result, in the next one and a half years the resectability rate for cancer of the colon increased from 45 to 85 per cent. The author concludes that all persons, especially those over 40 years of age, with a change in bowel habit and with unexplained local abdominal pain, intermittent gas cramps or distention should be suspected of having a cancer of the colon until proved otherwise. Persons presenting these symptoms should have an exhaustive clinical survey including bimanual rectal and pelvic examination, sigmoidoscopy, x-ray study test for occult blood in the stool and peritoneoscopy when indicated. If these cases are suspected and proper investigation made, cancer of the large intestine can be discovered in a sufficiently early stage to permit radical surgical resection and cure.

## Public Health Reports, Washington, D. C.

58 1233-1264 (Aug 13) 1943

- \*Jaundice Following Administration of Human Serum J. W. Oliphant, A. G. Gilliam and C. L. Larson—p 1233  
Toxic Effects of Atabrine and Sulfadiazine in Growing Rats C. I. Wright and R. D. Lillie—p 1242  
Sickness Absenteeism Among Male and Female Industrial Workers, 1933-1942 Inclusive W. M. Gafafer—p 1250

58 1265-1292 (Aug 20) 1943

- Incidence and Prevalence of Cancer of Lung H. F. Dorn—p 1265  
Carbarone Treatment for Balantidium Coli Infections. M. D. Young and R. Burrows—p 1272  
Sickness Absenteeism Among Industrial Workers First Quarter of 1943, with an Inquiry into Occurrence of Respiratory Diseases, 1934-1943 W. M. Gafafer—p 1273  
Mechanism of Antitoxic Immunity in Clostridium Perfringens (Welchii) Infections in Guinea Pigs Sarah E. Stewart—p 1277

58 1293-1328 (Aug 27) 1943

- Studies on Trichinosis XV Summary of Findings of Trichinella Spiralis in Random Sampling and Other Samplings of Population of the United States W. H. Wright, K. B. Kerr and L. Jacobs—p 1293

**Jaundice Following Administration of Human Serum**—Oliphant and his associates studied hepatitis following the use of yellow fever vaccine when an outbreak occurred in the Virgin Islands in the summer of 1942. A total of 11,358 individuals on the islands of St. Thomas and St. John was inocu-

lated with lot 331 yellow fever vaccine containing pooled human serum. The vaccinations were performed between March 4 and March 28, 1942. Jaundice was first noted in May. It was estimated that between 300 and 500 cases occurred. A survey revealed that among the vaccinated population the incidence of jaundice was 14.7 per cent. The disease varied from very mild to extremely severe cases. It seems evident from the prolonged incubation period and from the clinical symptoms that the disease under observation was identical with that previously described and designated as homologous serum jaundice. In experimental studies the authors produced jaundice by inoculation of two lots of yellow fever vaccine containing pooled human serum. Jaundice was produced by the inoculation of small amounts of filtered serum from 2 individuals and a group of 9 individuals who had previously received yellow fever vaccine containing human serum. The jaundice producing agent is filtrable and survives drying in vacuum storage for long periods in serum at 4 C. and heating to 56 C. for one-half hour in the dried state. Evidence is presented that the jaundice producing agent is present in the blood before jaundice appears but not two and one-half months after disappearance of jaundice. There was evidence suggesting that the jaundice producing agent may be neutralized by ultraviolet irradiation. The sexes are apparently equally susceptible. Transmission of this type of jaundice by ordinary contact has not occurred during this study. Attempts to produce jaundice in experimental animals and to develop a complement fixation test were unsuccessful. It was recognized in 1942 during an epidemic of jaundice in the United States Army that some agent in human serum employed as a diluent in yellow fever vaccine was probably responsible. The yellow fever vaccine now in use does not contain serum and so far has not produced jaundice.

## Radiology, Syracuse, N. Y.

41 213-314 (Sept.) 1943

- \*Preoperative Roentgen Therapy of Breast Carcinoma Analysis of Histologic Reaction and Roentgen Technique D. S. Dann and R. Koritschoner—p 213  
Radiation Therapy in Carcinoma of Rectum and Sigmoid Experimental Study of Danger Dose of Roentgen Rays for Intestinal Mucosa in Dogs and Analysis of 195 Cases Treated in State of Wisconsin General Hospital During 1928-1938 E. A. Pohle and B. K. Lovell—p 225  
Radiologic Exploration of Sinus Tracts, Fistulas and Infected Cavities H. C. Gage and E. R. Williams—p 233  
Roentgen Therapy for Bronchogenic Carcinoma E. T. Leddy—p 249  
Radium Treatment of Granular or Hypertrophied Lateral Pharyngeal Tonsillar Bands R. E. Fricke and P. N. Pastore—p 256  
Giant Cell Tumors Radiation Therapy and Late Results J. Gershon Cohen—p 261  
Roentgen Therapy of Orbital Pituitary Portals for Progressive Exophthalmos Following Subtotal Thyroidectomy F. B. Mandeville—p 268  
Protection in Radiology An Exhibit Edith H. Quimby and J. Pool—p 272  
Types of Pulmonary Tuberculosis Which Demand Disqualification for Active Duty in Navy C. H. Warfield—p 282  
Some Considerations of Wartime Radiology in Navy C. F. Behrens—p 284  
Federal Regulations Affecting Allocation of X-Ray Equipment and Supplies R. K. Myers—p 288

**Preoperative Roentgen Therapy of Breast Carcinoma**—Analysis of 12 cases by Dann and Koritschoner reveals that complete sterilization of carcinoma of the breast and axillary nodes by fractionated irradiation has not been accomplished. Irradiation brings about a definite reduction in the size of the tumor and pronounced regressive changes, which may be due to the enhancement of the natural defensive reaction of the host. Operable carcinoma of the breast should be treated by radical amputation. The additional benefit derived from preoperative irradiation of operable carcinoma remains to be established. Inoperable carcinoma may become operable after irradiation. Radiation therapy is recommended in inoperable carcinoma operable carcinoma for which operation is refused and operable carcinoma with physical conditions contraindicating operation. Further studies of the individual factors governing irradiation may disclose an improved technique for the treatment of carcinoma of the breast. The authors suggest that a comprehensive centrally controlled plan of investigation be inaugurated to establish the precise value of radiation therapy of breast carcinoma.

**South Carolina Medical Assn Journal, Florence****39 175-204 (July) 1943**

- Some Problems of Allergy in Childhood B N Miller—p 175  
 Review of and Case Report of Rocky Mountain Spotted Fever E L Power and M J Boggs—p 180  
 Observations in Shock Therapy C J Milling—p 182

**39 205-224 (Aug) 1943**

- Endoscopy Review of Cases R W Hanchel—p 205  
 Suppurative Appendicitis Case Report R M Pollitzer—p 209  
 Lymphoepithelioma G R Laub—p 210

**Southwestern Medicine, Phoenix, Ariz****27 163-184 (July) 1943**

- Herniation of the Intervertebral Disk (Fundamentals of Diagnosis and Treatment) J M Owens—p 165  
 Common Errors in Orthopedic Surgery J L Smith—p 171  
 Gallbladder Disease W W Haggart—p 173

**Tennessee State Medical Assn Journal, Nashville****36 289-328 (Aug) 1943**

- Medical Aspects of Chemical Warfare as Related to Civilian Defense R M Powell—p 289  
 Traumatic Pseudocyst of the Pancreas C Harrison and F Cooper—p 299  
 Certain Complications of Treatment A Weinstein—p 305  
 Surgical Treatment of Peptic Ulcer G T Howard Jr—p 310  
 Acute Abdominal Symptoms Resulting from Black Widow Spider Bite. H Wilson—p 314

**War Medicine, Chicago****4 247-362 (Sept) 1943**

- Ophthalmic Injuries of War J L Matthews—p 247  
 Atmospheric and Immersion Blast Injuries T V Theis—p 262  
 War Neuroses After Air Attack on Oahu, Territory of Hawaii, Dec 7, 1941—p 270  
 Clinical Toxicity of Atabrine Dihydrochloride (Quinacrine Hydrochloride) U S P XII Controlled Comparative Study of Toxicity of American and of Foreign Atabrine When Administered in Doses Commonly Employed in Prophylaxis of Malaria E H Loughlin, R H Bennett, E Santora and S Mattucci—p 272  
 Measurement of Vibration Sense Method and Means A Roth—p 280  
 Comparison of One Hundred Army Psychiatric Patients and One Hundred Enlisted Men E G Billings, F G Ebaugh, D W Morgan, L I O Kelly, Genevieve B Short and F C Golding—p 283  
 \*Primary Pulmonary Coccidioidomycosis Report of Epidemic of 75 Cases D M Goldstein and S Louie—p 299  
 Effect of Adrenal Cortical Extract on Altitude Tolerance of Normal and of Adrenalectomized Rats A E Johnson, M Eckman and B E Lowenstein—p 318  
 Spontaneous Pneumothorax G H Stein, E B McConkie and A J Kuehn—p 324  
 \*Night Blindness of War P H Wosika—p 331

**Primary Pulmonary Coccidioidomycosis—Goldstein and Louie**

state that primary pulmonary coccidioidomycosis is a relatively uncommon but important infection. It is uncommon because its etiologic agent, *Coccidioides immitis*, must exist under certain climatic conditions which, according to present knowledge, occur in this country only in certain western states, notably California and Arizona. It is important because the disease is protracted despite its excellent prognosis. This importance becomes manifold at the present time because of the presence of many troops in or near areas where it is endemic. With the current flux of troops, bearing in mind the incubation period, one cannot emphasize too pointedly that this entity may present itself to the medical officers in foreign and in domestic stations aside from the regions where it is endemic. The authors report an epidemic of 75 cases of primary pulmonary coccidioidomycosis. The history reveals exposure in a region where coccidioidomycosis is endemic, with symptoms of pain in the chest, chills, fever and cough. Positive physical findings may or may not be present, but they are not in themselves diagnostic. It is suggested that cervical adenopathy with sore throat but without a pharyngitis may be an early characteristic of this disease. A positive cutaneous reaction to coccidioidin and x-ray appearances aid in establishing the diagnosis. A conclusive diagnosis is made by cultures of sputum and by serologic tests. The prognosis is excellent. Treatment is symptomatic, emphasis is placed on rest in bed, adequate intake of fluids, high calory and high vitamin diet, sedatives and anal-

gesics. The sedimentation rate was the primary factor in the determination of the resumption of activity by the patient, an arbitrary standard requiring a sedimentation rate of 15 mm. or less in sixty minutes with complete absence of symptoms was established as the point at which a patient was allowed out of bed. Convalescent blood from two donors with high precipitin titers was used for transfusion of 2 patients who were critically ill. Both patients demonstrated immediate clinical improvement after the transfusions. Evaluation of this type of therapy cannot be deduced from these 2 isolated instances.

**Night Blindness of War**—According to Wosika, night blindness of war was first reported during the Crusades and since that time almost all major military efforts have been accompanied by night blindness, particularly wherever overstraining, heat, sun blinding, hunger and thirst have occurred. The first world war was responsible for much literature on this subject. The term night blindness of war embraces organic and idiopathic night blindness. In the literature poor dark adaptation as measured by instruments also has been included under this term. Malnutrition (lack of vitamin A) causes night blindness, xerosis and xerophthalmia. Therapeutic correction is simple, swift and sure. Poor dark adaptation does not seem related to night blindness, xerosis, xerophthalmia or food adequacy. Therapeutic correction is not successful even with huge supplemental doses of vitamin A. In the present state of knowledge of scotopic vision, night blindness and poor adaptation must be differentiated. It is suggested that further work with the rate and end values of dark adaptation concerning rods, cones and influences of the nervous system be performed in an attempt to establish a firm physiologic basis for dark adaptation tests. While dark adaptation tests do measure the ability to see in low luminosity, the controlling mechanism is not established, the relation to vitamin A is not clear and its usefulness in military medicine as regards night blindness of war must be questioned, although further refinements of technique may enhance the value of the test.

**Wisconsin Medical Journal, Madison****42 881-1004 (Sept) 1943**

- \*Trichinosis Epidemic in Rock County T L Vogel—p 909  
 New Prophylactic Measures in Tetanus C N Neupert—p 916  
 Treatment of Civilian War Injuries W H Cole—p 918  
 Colloid Carcinoma of Gastrointestinal Tract Occurrence in Boy Twelve Years Old with Production of Pseudonyxoma of Peritoneum J M King and J J Satory—p 925  
 Thirty Five Year Survey of Appendicitis in Rock County T J Snodgrass, W A Munn and T Flarity—p 928  
 Thymic Tumor in Myasthenia Gravis Case Report E Haynes—p 932

**Trichinosis Epidemic**—A man complaining of muscle pain, swollen jaws and puffy eyes following a gastrointestinal upset was admitted to a Janesville hospital. A routine blood smear showed eosinophilia and suggested trichinosis. It was discovered that many members of the neighboring community were afflicted with similar complaints. The epidemic involved 28 patients from 13 families. There was a history of eating summer sausage obtained from a local butcher and followed in a week by illness. The sausage was made from contaminated pork. Since summer sausage is not treated by cooking or refrigeration, the encysted larvae were not killed. Symptoms referable to the gastrointestinal tract, the eyes and the muscles predominated. Chills and remittent fever with signs of meningeal irritation were common. Cardiovascular signs, weight loss and cough were observed. The blood picture showed eosinophilia, the curve paralleling the course of the disease. Relative lymphopenia was common. Blood calcium was low in 2 cases. The acute phase lasted three or four weeks, with residual symptoms of weight loss, weakness and eosinophilia. Purging with castor oil and calomel was of doubtful benefit, it was probably started too late to be effective. Cod liver oil and calcium, with some parathyroid injection, were given in large doses in 1 case. Despite the low blood calcium, only 48 mg in 1 case and in another 44 mg, those without treatment did as well as those with it. No anemia developed though the red blood cells fell a few hundred thousand in the cases studied.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### Brain, London

66 89-162 (June) 1943

- Afferent Areas in Brain of Ungulates. E. D. Adrian—p. 89  
Mode of Representation of Movements in the Motor Cortex, with Special Reference to Convulsions Beginning Unilaterally (Jackson). F. M. R. Walshe—p. 104  
Indirect Injuries of Optic Nerve. J. W. A. Turner—p. 140  
Reflex Studies in Electrical Shock Procedure. F. T. Kino—p. 152

### Journal of Royal Army Medical Corps, London

81 1-50 (July) 1943

- Case Showing Unusual Effects of Trauma. J. V. Wilson—p. 1  
\*Smallpox Treated with Sulfanilamide. J. D. Cottrell and H. T. Knights—p. 7  
Survey of Methods of Treatment of Tropical Ulcers. A. F. McGill—p. 16  
Occupational Therapy for Psychoneurotics in Hospital. J. F. Wilde and C. J. Morgan—p. 24  
Phenol and Camphor Treatment of Ringworm of Glabrous Skin. An Interim Report. G. G. Waldin—p. 32

**Smallpox Treated with Sulfanilamide**—Cottrell and Knights report observations in 11 cases of smallpox which they observed in the course of a civilian epidemic of the disease, which occurred in an area in the Middle East Command. In the area in which the majority of the reviewed cases occurred, there were reported 444 cases, a figure estimated to represent about one third of the total incidence. The estimated mortality was about 20 per cent. Nine of the 11 cases occurred among British troops, the other 2 involved one of the authors and a Nursing Sister. In 4 of the 11 cases no vaccination scars could be detected. Of these 4, 3 were fatal. In all the others there were good "baby" scars. It is considered that the effect of a good "baby" vaccination is sufficiently long lasting demonstrably to modify the effect of an attack of smallpox occurring twenty to thirty years later. The treatment consisted in addition to general and symptomatic measures of administration of sulfanilamide. Treatment was commenced as soon as the vesicular stage was reached, and the average total dose was 22.5 Gm given over six days. The main if not sole effect of the sulfanilamide appeared to be the reduction of complications due to pyogenic organisms, no effect was detected on the essential virus. There was definite mitigation of suppuration in the skin lesions, a lessening of ocular complications and a reduced incidence of pulmonary complications. Instead of a true pustular stage there was a vesicular stage in which the vesicular fluid was slightly milky and not yellow even in cases with a fatal outcome. The process was later one of desiccation and desquamation rather than of the classic pustulation and scabbing.

### Lancet, London

2 179-210 (Aug. 14) 1943

- \*Toxicity of Tannic Acid. Experimental Investigation. G. R. Cameron and R. F. Milton and J. W. Allen—p. 179  
Formation of Red Blood Corpuscles. F. Duran Jorda—p. 186  
Bone Grafting in Treatment of Fractured Tibia and Fibula. J. R. Armstrong—p. 188  
Delayed Recovery from Trilene Anesthesia. S. F. Durrans—p. 191  
Clinical Signs of Diphtheria in Inoculated Children. C. Neubauer—p. 192

**Toxicity of Tannic Acid**—Cameron and his associates report an experimental investigation into the toxicity of tannic acid and the chances of its absorption from burned areas. Some information about the fate of tannic acid after it reaches the circulation is given and contrasted with the behavior of gallic acid. Experiments have been carried out on goats, rabbits, guinea pigs and rats, 250 animals being used in all. Tannic acid was obtained from seven different firms, but one sample was employed for most of the experiments. This sample contained about 20 per cent gallic acid. The authors present experimental evidence that in animals tannic acid has injurious effects on the liver, capillaries and possibly on the bone marrow. After the introduction of small amounts of tannic acid directly into the blood stream or large amounts into the subcutaneous

tissues, animals show centrolobular necrosis in the liver, increased capillary permeability with leakage of plasma into the subcutaneous tissues, peritoneum and occasionally the lungs, and leukocytosis. Production of a reservoir of tannic acid in the tissues, as by subcutaneous injection, leads to continued absorption of small amounts into the blood and a serious intoxication. Tanning a burnt surface may also be followed by absorption of tannic acid. With lapse of time the continuous bathing of the liver cells with blood containing tannic acid results in damage and destruction of certain tissues. The injurious effect cannot be attributed to gallic acid, which is rapidly removed from the blood and can be tolerated in large amounts. The authors point out that the chief criticism of tannic acid treatment of burns comes from the experimentalists. Caution must be exercised in applying to man without discrimination conclusions reached by the study of animals. They recognize that the ultimate decision for or against the tannic acid method must come from human experience, and they note that evidence is already accumulating which suggests the need for critical revision of this treatment.

### An Cated de Pat y Clin Tuberc, Buenos Aires

4 5-205 (June) 1942 Partial Index

- Allergy in Experimental Tuberculosis. A. R. Arena—p. 72  
Michailow Test in the Diagnosis of Activity in Tuberculosis. R. F. Vaccarezza, J. C. Rey, S. F. Erdstein and B. Enquin—p. 89  
\*Results of Artificial Pneumothorax Plus Pneumolysis in 300 Cases of Pulmonary Tuberculosis. R. F. Vaccarezza and F. A. Medici—p. 111  
\*Relation of Tuberculous Meningitis to Organic Focal Tuberculosis. R. F. Vaccarezza, F. C. Tucci and J. B. Gómez—p. 146.

**Artificial Pneumothorax and Pneumolysis**—Vaccarezza and Medici state that artificial pneumothorax should be instituted early in the course of pulmonary tuberculosis. When pneumolysis is necessary it should be done three or four months after the pneumothorax. The Jacobaeus-Maurer type of operation is the most satisfactory. In 300 cases of pulmonary tuberculosis treated by this method and followed for a period of from one to three years, good results were observed in 77.3 per cent. This figure includes cases reported as apparently cured as well as those with a favorable course. There was no surgical mortality. Later in the course of the disease 7.3 per cent of the patients died. The efficiency of pneumothorax combined with pneumolysis is dependent on how early collapse therapy is instituted and on the completeness of the collapse obtained.

**Tuberculous Meningitis and Focal Tuberculosis**—The study of 90 patients of different ages with tuberculous meningitis showed that it constituted an isolated process in 34.4 per cent and was associated with focal lesions in 65.6 per cent. Focal pulmonary tuberculosis was present in 53.3 per cent. Of these cases 25.5 per cent were primary, 47.7 per cent secondary and 26.6 per cent tertiary tuberculosis. The infant was much more subject to the development of meningitis. Roentgenologic examination revealed fresh lesions of primary infection in 42.2 per cent, calcified lesions of primary infection in 11.1 per cent, juxtahilar infiltration in 6.6 per cent, fresh or calcified military shadows in 86.7 per cent and tertiary pulmonary tuberculosis in 26.4 per cent. In no case did the x-rays reveal a "healthy" lung.

### Arch. Lat. Amer. de Card y Hemat., Mexico, D. F.

13 51-88 (March-April) 1943 Partial Index

- \*A Study of Liver Function in Cardiac Insufficiency. I. Chávez, B. Sepúlveda and I. A. Ortega—p. 51  
Diagnostic Clues in Cardiovascular Clinic. P. D. White—p. 81

**Liver Function in Cardiac Insufficiency**—Chavez and his co-workers studied the liver function of 35 patients with heart disease, 30 of whom were decompensated. An increase of blood bilirubin and urobilinogen in the urine and a retention of bromosulphalein was observed in all patients with cardiac insufficiency. There was a very close correlation between the degree of liver dysfunction and the severity of heart insufficiency. In the compensated cardiac patients the liver tests were, as a rule, normal. In those with cardiac decompensation the blood bilirubin and urinary urobilinogen returned to normal and the bromosulphalein gave normal results when compensation was reestablished.



**Bol Inst de Med Exper p Cáncer, Buenos Aires****19 419-818 (Dec) 1942 Partial Index**

- Experimental Cancer Produced by Tobacco Tar Spindle Cell Sarcoma  
A H Roffo—p 503
- Tar from Extracted Tobacco and Decrease of Cancerization A H Roffo—p 431
- Experimental Gastric Cancerization by Ingestion of Oxidized Fats  
A H Roffo—p 503
- Female Sex Hormone in Precancerous States Its Determination in Fibroadenoma A H Roffo and A E Roffo Jr—p 559
- Ultra High Voltage Roentgen Therapy (400 to 600 kilovolts) Report of 2 Cases of Mediastinal Tumor Treated with Favorable Results  
A H Roffo and A E Roffo Jr—p 587
- Rapid Disappearance of Recurrent Spindle Cell Sarcoma Treated with Ultra High Voltage Roentgen Therapy (400 kilovolts) A H Roffo and A E Roffo Jr—p 599
- Roffo's Reaction in 36,961 Patients Statistical and Clinical Results  
B G Stuckert—p 629
- Cancer Mortality in City of Buenos Aires During 1941 A H Roffo—p 645

**Extraction of Tar from Tobacco**—Roffo shows that the extraction of tobacco with organic solvents such as alcohol, chloroform, acetone, petroleum ether, paraffin and benzene removes from it substances generating carcinogenic hydrocarbons which are to be found particularly among the phytosterols. The cancerogenic action of these extracted tars has been slight when compared with that of whole tars. Smokers could be provided with tobacco the tar content of which would have only slight cancerogenic action, but because the extracted tobacco would have lost much of its taste the author considers it doubtful that the tobacco would be acceptable.

**Ultra High Voltage Roentgen Therapy for Mediastinal Tumors**—The Roffos report 2 instances of ultra high voltage roentgen therapy. The first patient was a girl aged 18 with a large lymphosarcoma of the mediastinum and a metastasis in the lumbar vertebral column. She was treated with 600 kilovolts, receiving two series of 6,040 and 6,174 roentgens respectively. A year and seven months after completion of the treatment the patient was found cured clinically and roentgenologically. The second patient was a man aged 33 with a large mediastinal tumor and abdominal and lumbar metastases. He too was found well one year after treatment with ultra high voltage roentgen therapy.

**Deutsche medizinische Wochenschrift, Leipzig****68 105-132 (Jan 30) 1942 Partial Index**

- \*Prognosis of Arterial Hypertension W Weitz—p 105
- Hypertension as Cerebral Function A Sturm—p 110
- Vegetative Nervous System and Immunity L Goreczky—p 114
- \*Therapeutic Attempts to Promote Local Blood Perfusion of Tissues in Varicose Crural Ulcers Kate Pezold—p 116
- Successful Roentgen Irradiation in Case of Pulmonary Echinococcus H Brodersen and A Buding—p 118

**Prognosis of Arterial Hypertension**—Weitz is concerned with a condition which Volhard designates as red hypertension. With the same degree of hypertension the threat to life is greater in younger than in older persons. The highest level of the mortality curve for persons with hypertension is about ten years below that of persons with normal blood pressure. The prognosis is to some extent determined by the treatment, particularly by the degree to which the patient follows the regulations of his mode of living. An enlarged heart indicates that hypertension has existed for some time, but, as a physiologic result, it does not make the prognosis more unfavorable. A systolic murmur over the apex is more frequent when there is insufficiency, but it is of no prognostic significance if other symptoms are absent. A rapid pulse is an unfavorable prognostic sign. Occasional extrasystoles are of no particular importance, but pulsus alternans is an unfavorable sign. The presence of cardiac insufficiency causes stasis in the pulmonary circulation and may signify relative insufficiency. Urinary changes (protein, erythrocytes and casts) indicate an unfavorable prognosis. Changes in the fundus oculi is a serious sign in patients with hypertension. Cerebral defects manifested by impairment of memory, neurasthenia and irritability indicate an unfavorable prognosis. A history of syphilis, the presence of obesity and diabetes render the prognosis less favorable.

**Therapy of Varicose Crural Ulcer**—Pezold stresses that only those measures constitute a causal therapy of crural ulcer which counteract the pathologic blood perfusion of the lower extremity that exists in this condition. At the dermatologic

clinic of the University of Berlin emphasis is placed on the dietetic treatment of Bommer, which provides large amounts of fruit juices, fruits and vegetables, and on physical therapy. The administration of adenosine triphosphoric acid and of ovarian extracts served as supporting measures. These latter substances promoted the therapeutic effects of the other treatments but had no effect when given alone. The author reviews observations on 25 women with varicose crural ulcers. Some were treated with Bommer's diet, hydrotherapeutic measures and the aforementioned supporting measures, others only with diet and hydrotherapy, and still others only with glandular extracts. The results were most favorable in the first group. The endocrine substances alone were without noticeable influence.

**Munchener medizinische Wochenschrift, Munich****89 1-24 (Jan 2) 1942 Partial Index**

- \*Observations on Sudden Heart Death H Zettel—p 1
- What Every Physician Should Know About Rectal Cancer Guleke—p 7
- Treatment of Sweet Gland Abscesses H J Lauber—p 11

**Sudden Heart Death**—Zettel reports the clinical histories and the postmortem findings of 14 patients, a number of them soldiers, who died suddenly. There were 2 cases of rupture of the aorta (one a ruptured aneurysm), 5 cases of valvular lesions or endocarditis and myocarditis, and 7 cases of coronary changes. The patients were exceptionally young, their ages varying between 22 and 47 years. In addition to the organic changes, functional factors played a part as eliciting causes in the sudden heart deaths. The question of impairment by military service is discussed. Careful attention should be given to the presence of circulatory disorders during the preinduction examination. Functional tests of the heart should be included in the general examination. In deciding the suitability for flying service, electrocardiographic studies should be made.

**Zentralblatt fur Bacteriologie, Jena****148 1-64 (Nov 5) 1941 Partial Index**

- Serum Against Hoof and Mouth Disease and Its Production O Waldmann G Pyl, K O Hobohm and H Möhlmann—p 1
- \*Successful Transmission of Poliomyelitis Virus from Human Subjects to Ferrets F Patocka—p 15
- Infection Experiments on Various Intermediate Hosts of Bilharzia with a Single Miracidium of Bilharzia Mansoni and B Japonica H Vogel—p 29
- Cause of Rugate Growth Forms and of Phenomenon of Disintegration in Pseudomonas Pyocyanea S Fiala—p 58
- Human Amniotic Fluid as Bacterial Nutrient Medium S Roufogalis—p 61

**Transmission of Poliomyelitis Virus from Human Subjects to Ferrets**—Patocka reasoned that it would be desirable to find an animal other than the monkey for the transmission of the human virus, for this would make possible the production of vaccines for preventive immunization. The monkey virus is too close to the human and consequently is too dangerous for use in human subjects. The author took advantage of the poliomyelitis epidemic of October 1939 and inoculated a number of ferrets intracerebrally with the spinal cord tissue of fatal cases of poliomyelitis. In three different instances in which material was obtained from rapidly fatal cases ferrets developed fever, parietic symptoms and paralytic symptoms. Two ferrets died with symptoms of poliomyelitis. From one of these the virus could be transmitted to a second ferret, which died with the same symptoms after a longer period of incubation. Rabbits, guinea pigs and mice which were inoculated simultaneously with the ferrets failed to develop signs of the disease. Further studies excluded the possibility that the ferrets suffered from a nonspecific irritation of the central nervous system caused by heterogenous spinal substance or from a spontaneous ferret encephalitis. The spinal cord of the ferrets showed considerable degeneration of the motor cells of the gray spinal substance, but the inflammatory changes were not quite adequate for poliomyelitis. The author explains this by the fact that the virus had taken root in a less susceptible species of animal. He admits that his experience was exceptional and that it will probably not be possible to transmit regularly the virus of human poliomyelitis to ferrets. The exceptional virulence of the virus was probably responsible for the successful transmission.

## Book Notices

**The Etiology of Delinquent and Criminal Behavior** A Planning Report for Research By Walter C. Reckless. Bulletin 50. Paper. Price \$1.50. Pp. 169. New York: Social Science Research Council, 1943.

In this interesting monograph the author attempts an evaluation of the important contributions and theories on the causes of criminal behavior and suggests a plan for further research. "The present monograph then may be looked on as an attempt to promote unified effort by the different disciplines—psychiatry, psychology and sociology—engaged in the study of the causes of delinquency and criminal behavior." In the complex field of criminology, heredity, subnormal intelligence, mental abnormality, endocrines, physical types and mental types, i.e. 'typical criminal,' have been offered as the deciding factors largely by psychiatrists and other physicians. Sociologists, on the other hand, have emphasized economic conditions, environmental conditions, family situations and exposure to crime, to name a few of the factors held responsible for conflict with the law. The author describes each of these hypotheses and attempts to point out the fallacy of attempts to give them as the sole cause of crime or in some instances to have anything to do with criminal behavior. Throughout the manuscript, emphasis is placed on the author's view that none of the views which have been advanced to date can be accepted as the solution to the problem, but it is obvious that his prejudices favor sociological explanations. He proposes more controlled mass studies as the line of research most likely to give results. In this attempt it is assumed that exhaustive psychiatric studies to all individuals in the group could be added to the environmental data to be collected. This monograph is a valuable contribution to the field of criminology in its effort to bring together research work carried on to date with provocative opinions as to the value of each theory.

**A Critical Analysis of Collapse in Underground Workers on the Kolar Gold Field** By Anthony Caplan, M.D., M.R.C.P. Reprinted from Bulletin No. 54 of the K. G. F. Mining and Metallurgical Society. Paper. Pp. 92. With 12 illustrations. Marikuppam P. O. Kolar Gold Field India. T. Williams, 1942.

This is a discussion of the results of an investigation of the mechanism of heat collapse and its contributory causes in the Ooregum, Mysore, Champion Reef and Nundydroog mines of the Kolar Gold Field from Nov. 18, 1939 to Nov. 17, 1941. The factors observed that may have influenced the incidence of heat collapse were individual, seasonal and underground. Individual factors were determined by a careful history and physical examination of all cases (293) of alleged collapse in underground workers admitted during the two years to the Kolar Gold Field Hospital, irrespective of the mildness of the condition or its cause. Seasonal factors were determined by information on surface conditions obtained from the Kolar Gold Field Observatory. Information on underground factors, such as wet and dry bulb temperatures, humidity and velocity of air at the working places, was obtained from the mine superintendents.

The patients were classified into three groups according to whether their collapse was due entirely to underground conditions, partly to underground conditions and partly to individual factors or collapse was absent or unrelated to underground conditions. Two types of cases were determined clinically—mild, and moderate and severe.

The most interesting data deal with the 200 cases in the second group in which the individual factors were unacclimatization, loss of acclimatization and disturbances of health. An unexpected lower incidence of collapse among unacclimatized new employees shows that acclimatization to hotter underground atmospheres existing on deeper levels cannot be developed by many months of continuous work on the cooler levels. Loss of acclimatization appeared to be much more important in predisposing to heat collapse than unacclimatization. The health disturbances that predisposed to collapse were febrile illnesses, after-effects of celebrating festivals, food intake and nutrition, and water and chloride deficiency.

The pathologic physiology of collapse is discussed in terms of changes in the cardiovascular system and water and chloride metabolism. Many of the symptoms of collapse could be attributed to chloride deficiency. An interesting feature was the

correlation of the incidence of collapse with the rise and fall of surface dry and wet bulb temperatures and humidity, which was clearly established and provided positive evidence of the deleterious effect of high surface humidity.

The great importance of ventilation is emphasized by the occurrence of collapse most frequently below 5,000 feet in dead ends supplied with upcast air of low velocity. It is stated that, provided the dry bulb temperature is 110-120 F, a wet bulb of 90 F or under denotes good ventilation and comfortable working conditions, 91-93 borderline working conditions, 94-95 poor ventilation, and 96 or over conditions highly conducive to collapse. The occurrence of collapse depended more on the nature of the working conditions than on the character of the work.

The problem of the mining engineer is to prevent the wet bulb temperature at the face rising above 93 F. The value of air refrigeration is demonstrated by the dramatic fall in the incidence of collapse in the Champion Reef mine after installation of the air conditioning plant and the general low incidence, throughout the two year period, of collapse in the air conditioned Ooregum mine. It is stated that surface air conditioning plants will reduce the incidence of heat collapse for some years, but with further development of the mines it again will become a major problem, taxing the ingenuity and resourcefulness of the mining engineer.

**The Human Eye in Anatomical Transparencies** Explanatory Text By Peter C. Kronfeld, M.D., Director of Education, The Illinois Eye and Ear Infirmary, Chicago. Anatomical Transparencies By Gladys McHugh, Medical Illustrator, University Clinics, The University of Chicago. Historical Appendix By Stephen L. Polyak, M.D., Professor of Anatomy, The University of Chicago. Fabricated Price \$6.50. Pp. 99. With illustrations. Rochester, New York: Bausch & Lomb Press, 1943.

A new method of graphic representation, namely three dimensional illustration on cellulose acetate, is utilized in this volume to present the finest representation of the anatomy of the eye thus far available. A series of paintings showing serial dissections of the eye and orbit from the front and from the side at twice natural size has been prepared by Miss Gladys McHugh and republished on cellulose acetate so that one can actually see the anatomy of the eye layer by layer. The colors are natural and have been faithfully reproduced except in the case of veins and nerves, which have been made blue and yellow to distinguish them from the arteries. The text prepared by Dr. Peter C. Kronfeld gives a detailed study of anatomy of the eye and in addition a most complete description of the anatomy as shown in Miss McHugh's illustrations. Finally the book includes a history of anatomic illustration of the eye by Dr. S. L. Polyak, a real contribution to medical history on a par with previous histories of medical illustrations such as that of Mortimer Frank. Every ophthalmologist and every teacher particularly of the anatomy of this subject, will find this book invaluable. Indeed it is reported that the demand is already well beyond the available supply.

**Pharmacology, Materia Medica and Therapeutics.** By Charles Solomon, M.D., F.A.C.P., Associate Attending Physician and Chief of the Medical Clinic, Jewish Hospital of Brooklyn. Collaborator, Hazel Houston, M.A., R.N., Instructor in Materia Medica, School of Nursing, Bellevue Hospital, New York City. Fifth edition. Cloth. Price \$3.25. Pp. 823. With 91 illustrations. Philadelphia: London & Montreal: J. B. Lippincott Company, 1943.

The author of Proverbs said 'With all thy getting get understanding.' The authors of this book assume that the student nurse has ability and time to become omniscient. They present a pot-pourri complex enough to confuse a witch of Endor. That their presentation aids or gives time for understanding is questionable. They encourage the neophyte with this advice: 'The student's mastery of materia medica will be greatly enhanced by her ability to connect the facts and theories in the subject with the facts and theories of related subjects.'

The student will therefore do well to make an effort to relate what she learns in materia medica with what she has already learned in anatomy, physiology, chemistry and bacteriology. Wonderful words, but even the authors do not live up to them. In a discussion of some of the major present day problems proprietary medicines receive the conventional condemnation. The authors give a list of the differences in price of proprietary and ethical drugs which is either not understood or is used as propaganda. For example the difference in the price of aspirin and acetylsalicylic acid is a wholesale price and

does not affect the retail purchaser. They do not give the devil his due. They give a list of some common names for drugs or preparations, such as Basham's Mixture, Brown Mixture, Burrow's Solution, Channing's Solution, Clemm's Solution, Dalby's Carnative, Warburg's Tincture and Zambelletti Solution. These names are worse than worthless and their use should receive the same condemnation as proprietary preparations. They retard scholarship by using time and space that should be given to more important subjects. Because the book contains so much unimportant matters, the discussion and explanation of worthwhile subjects is limited to brief and unsatisfactory statements. This applies particularly to the connection of physiology with pharmacologic action, the importance of which they emphasize in the first part of the book but neglect later. The book is clearly written and contains many fine illustrations and a lot of facts not found in many of the better known books on pharmacology. It has an elaborate general index and an index of symptoms of most diseases.

**The Medical Use of Sulphonamides.** Medical Research Council War Memorandum No. 10. Paper. Price 25 cents, 9d. Pp. 40. New York: British Information Services, London: His Majesty's Stationery Office, 1943.

This booklet is a concise presentation of the present status of the sulfonamide compounds with a maximum of facts and a minimum of wasted words. The pages are crammed with information presented in a manner especially suitable for those who wish an accurate view of these agents without encountering confusing and frequently questionable details. The contents encompass an introduction and discussions on chemistry, pharmacology, general considerations governing the use of sulfonamides, questions of supply (in Great Britain), general scheme of dosage, regulation of dosage by the sulfonamide content of the patient's blood, treatment of specific infections, toxic reactions to sulfonamides, estimation of the concentration of sulfonamides in body fluids, bacteriologic studies and sterilization of sulfanilamide powder.

This memorandum has been prepared for the Therapeutic Requirements Committee (appointed by the Medical Research Council) by several well known authorities. Their attitude and conscientious approach to the subject is made evident by their preference for recognized nomenclature, "To avoid confusion and difficulties in supply, sulphonamide drugs should not be ordered or prescribed by proprietary or brand names," and prescribing in terms of the metric system, "Doses should be ordered and recorded in terms of grammes and not in terms of tablets, since not all the sulphonamide tablets issued commercially are of standard 0.5 gm content." The plea for use of recognized nomenclature is refreshing in a country where trade names are rampant, and should be well received and encouraged. The contributors list names under which sulfanilamide is sold or described, the number is greater than fifty for this single drug, an excellent reason for the use of scientific nomenclature.

**An Atlas of Anatomy in Two Volumes.** By J. C. Bolleau Grant, M.C. M.B., Ch.B., Professor of Anatomy in the University of Toronto. Toronto: Volume I. Upper Limb, Abdomen, Perineum, Pelvis and Lower Limb. Cloth. Price, \$5. Pp. 214 with 227 illustrations. Baltimore: William Wood & Company, 1943.

Up to the year 1900 gross anatomy was the major study of preclinical medicine. There was ample time for it. Students dissected the body more than once. Atlases were of great help, and those then made corresponded with the practice of repeated dissection. They were "systematic," showing the bony, muscular, vascular and nervous systems separately. Now the time available for dissection is reduced. Only one dissection is possible. Grant's regional atlas is adapted to this change. Its illustrations show all the "systems" in each region. So the drawings are fewer. Spalteholz has over a thousand, Toldt over fifteen hundred. Grant covers all but the head, neck and thorax with two hundred and twenty-seven. The drawings are accurate and instructive, being carefully made from special preparations. They show more "relations" than did the older atlases, and the atlas is less expensive. The legends under some drawings are in one or two instances puzzling, e.g., on page 83 is "A stage in the exposure of the (common) bile duct, embryological approach." On page 87 are drawings of variations in the bile duct with the legend "Precocious bile passages." The atlas is good and should prove popular with students.

**The Common Form of Niacin Amide Deficiency Disease, Aniacinamidosis.** By William Kaufman, Ph.D., M.D. Cloth. Price, \$3. Pp. 62. Bridgeport, Conn.: The Author, 1943.

"Aniacinamidosis" is proposed as the name of a disease which the author characterizes by the syndrome resulting from a deficiency of niacinamide as determined by an original "office study" of "more than 150 patients." No laboratory studies were made and no illustrations are included. The symptoms of the disease, as well as its pattern, are stated in detail. A symptom was not considered as characteristic of the disease unless it appeared in at least 30 of the patients studied, disappeared following niacinamide therapy, and reappeared on cessation of therapy. The book is valuable in that it lists the symptoms which may result from a niacinamide deficiency. However, neither the single symptoms listed nor the entire syndrome are sufficiently unique or characteristic for the disease to warrant a positive diagnosis on their presence in a patient. The book leaves the impression that niacinamide deficiencies are vastly more prevalent than generally believed and that the daily requirements of man are considerably higher than those indicated by legal regulations. The author rightly recognizes that a serious weakness in his contribution lies in the absence of objective laboratory studies on his patients. A limited but valuable bibliography is included.

**The Australian Army Medical Services in the War of 1914-1918. Volume III. Special Problems and Services.** By Colonel A. G. Butler, D.S.O., V.D., B.A. Cloth. Pp. 1103, with 85 illustrations. Canberra: Australian War Memorial, 1943.

With this volume Colonel Butler completes the task assigned him in writing the history of medical services of the Australian army in the war of 1914-1918. Section I discusses the technical problems of chemical warfare, moral and mental disorders, venereal disease, the influenza pandemic of 1918-1919 and the surgery of repair and rehabilitation. Section II is devoted to the medical services of the naval and the newly created air services. Section III describes dental service, nursing and physical therapy. Section IV continues the story of the invalid soldier, his return home, the medical problems of sea transportation, the reexamination and the technical problem of pensioning. Section V furnishes statistics on the total casualties sustained by all the belligerents. A special feature of this section is a detailed clinical analysis of the figures of mortality and morbidity comprising the life history of the Australian imperial force. The three volumes constitute a valuable contribution to the literature on military medicine.

**Problèmes de médecine de guerre.** Par Daniel Cordier. Collection "France For ever" sous la direction du Professeur Henri Laugier. Paper. Price \$1.50. Pp. 182 with illustrations. Montréal: Les Éditions de L'Arbre, 1943.

The text is a composite of four articles. They are concerned with the struggle against heat, methods of resuscitation, anesthesia and traumatic shock. The author, who has an international reputation as an experimental physiologist, has presented these subjects critically, clearly and concisely. Although particular emphasis has been placed on the relationships of fundamental physiologic principles to problems peculiar to war, this book would be a valuable addition to the library of the student, the physician and the physiologist. It merits translation.

**Air Borne Infection. Some Observations on Its Decline.** By Dwight O'Hara, M.D., Professor of Preventive Medicine, Tufts College Medical School, Boston. Cloth. Price \$1.50. Pp. 114 with 15 illustrations. New York: Commonwealth Fund, 1943.

This little book presents a readable discussion of certain air borne infections with explanations for the decline in incidence of diseases of this group. The book is not closely integrated, it places special emphasis on the experiences of Massachusetts. Neither of these remarks should be interpreted as fault finding, however, since the author makes no claim to exhaustive discussion. Apparently his main purpose in writing this book is to urge that preventive medicine be incorporated to a greater extent in medical practice and that it should not be operated as a detached specialty.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### MANAGEMENT OF VIRUS PNEUMONIA

**To the Editor**—Please advise me if you know of any treatment that will shorten the period of morbidity for virus pneumonia infections of the respiratory tract. During last winter we had many cases most of which acted like the persistent head colds alone or in combination with tracheitis and would persist from three to seven or eight weeks causing much discomfort. The sulfonamide drugs have no effect on this infection and I have been treating it as we treated colds before the sulfonamide drugs came on the market.

John D. Blackburn MD Thomaston Ga

**ANSWER**—The inquirer is to be complimented on resisting the apparently irresistible urge to give some sulfonamide compound for the common cold and for the virus pneumonias. All who have studied the virus pneumonias carefully agree that chemotherapy is without special benefit. If a view (William Dameshek, *THE JOURNAL*, Sept. 11 1943, p 77) recently expressed is correct, namely that sulfonamide compounds given to certain patients with virus pneumonia may bring about a hemolytic crisis then chemotherapy for this disease is actually contraindicated.

There is no procedure known which will shorten the period of morbidity of the virus pneumonias. The statement that most cases lasted as long as three to eight weeks is somewhat at variance with general experience and leads one to suspect that some secondary infection like the common cold also affected this group of patients.

Several observers, chiefly roentgenologists state that roentgen therapy aids in shortening the disease but in the absence of control cases this must be accepted with reserve. Another group reports beneficial effects from the use of convalescent serum, with equally convincing evidence. In view of the apparent multiplicity of causes and of the lack of evidence of beneficial effect of convalescent serum in most other infections this approach would not seem to be promising. The use of penicillin has been reported in one case without beneficial effect.

In a benign, self-limiting disease as represented by the majority of the virus pneumonias during the past year therapeutic restraint should be exercised.

### ERADICATION OF FLEAS FROM RESIDENCES

**To the Editor**—I should like to have some advice on how to eradicate fleas. I have a cocker spaniel and whenever he is kept out of the house for any length of time such as a vacation the house becomes infested with fleas. These pests are tiny black or brown and hard. They hop up from the floor where they seem to like rugs as their hangout. The bite itches and twenty-four hours later an intense itching develops that can be relieved only by scratching off the top of the bite with subsequent scarring. I have used pyrethrum rotenone sulfur and various other sprays all to no avail. The companies that do exterminating work say they know of no method that will absolutely eradicate fleas from the house. As long as the dog is in the house there is some decrease in the number of fleas but not enough to help one's peace. Frequent bathing of the dog helps slightly but the main trouble is getting rid of the fleas in the house. Can you advise me or refer me to some book?

L. M. Harris MD Columbus Ohio

**ANSWER**—Flea infested premises are largely restricted to those where one or several dogs or cats are kept and where there are suitable places for the propagation of these pests—usually there is a badly lighted basement under the house.

Breeding places for fleas should be eradicated. Basement storage places which are difficult to keep clean may be the first point of attack. After any needed cleanup has been finished dogs and cats should be removed from the premises for two weeks or more during which period suitable fly sprays that contain pyrethrum may be employed in the house including the basement or adjacent quarters where fleas may propagate. Ordinary tallow candles may be placed on the floor at night and these surrounded with sheets of fly paper to aid further in the cleanup.

W. B. Herms (Medical and Veterinary Entomology New York, Macmillan Company) quotes Skinner who recommends sprinkling the floor liberally with about 5 pounds of flake naphthalene and closing the room for twenty-four hours. The acid fumes are said to destroy the fleas in badly infested quarters without material injury.

### CONTACT DERMATITIS FROM RAGWEED FAMILY

**To the Editor**—I am afflicted with dermatitis venenata caused by *Iva xanthifolia*. The following treatments have been failures. Vaccine made from weeds sent to three laboratories at different times. The last time I took twenty-five hypodermic injections saturated salicylic acid in alcohol fluid-extract of *Phytolacca* (poke root) 10 and 50 per cent balsam of Peru in castor oil 50 per cent Ichthammol in glycerin wearing a paper sock over my head when I am out and exposed to the weeds only the exposed parts of the face neck and hands are affected. I shall be grateful to you for any treatment you may recommend.

M. D. Wyoming

**ANSWER**—Contact dermatitis or dermatitis venenata from *Iva xanthifolia* or burweed marsh elder, as the weed is usually designated is not uncommon. Two other members of this genus of the ragweed family *Iva angustifolia* (narrow leaved marsh elder) and *Iva axillaris* (small poverty weed) are also major skin sensitizing weeds. If a patient is allergic to one of these weeds he is usually also sensitive to the other two. The latter plant is a common weed in many sections of Wyoming.

Local treatment in weed eczemas is merely palliative, as is the case in contact dermatitis of other origin. If contact with the offending weed cannot be avoided dermatitis will result and the only relief, until frost or a freeze kills the vegetation and gives temporary respite will be from local applications. Wet dressings of boric acid, 1:20 Burow's solution or phenolated calamine lotion are as satisfactory topical applications as any.

Varying degrees of relief can be obtained by the desensitizing treatment of the weed sensitive patient with the specific weed oil or oils. These specific oleoresins are usually best administered by the oral rather than the parenteral route.

Before specific therapy is instituted, a weed sensitive patient should be skin tested with all the common weeds in his environment. Weed sensitivity is usually polyvalent the individual being sensitive to two or more allergenic weeds. Sensitivity to half a dozen or more common environmental weeds is not unusual. Most dermatologists are equipped with acetone extracts of the common weeds for patch testing. Some sixty uncovered tests can be applied in about ten minutes. After a latent period of approximately forty-eight hours skin reactions at the tested sites will reveal the number of weeds to which a patient is sensitive. All weeds giving positive skin tests should be included in the treatment set.

Experience has shown that it requires the ingestion or injection of approximately 2 cc. of a specific weed oleoresin to reduce the sensitivity of a patient from the clinical to the subclinical stage. This amount is realized by the fractional ingestion of 1 ounce each of the 1:100, 1:50 and finally the 1:25 dilution of the oleoresin in corn oil. Oral treatment for weed sensitivity is outlined by Shelmire (Contact Dermatitis from Vegetation Patch Testing and Treatment with Plant Oleoresins *South M J* 33:337 [April] 1940). Oral treatment sets containing the specific weed oils to which an individual is sensitive can be obtained commercially on prescription from the Graham Botanical Laboratory Route 7 Willow Lane Dallas Texas.

Hypodermic injections of the allergenic weed oils cause local reactions unless well diluted 1:100 or more in some inert vehicle as corn or peanut oil. To obtain a total of 2 cc. of the specific oleoresin it would require some two hundred or more such injections. The ordinary weed sensitive patient has not the fortitude to submit to such prolonged therapy. This is especially true when it is realized that the same amount of allergenic oils can be ingested in a period of approximately three to four months. The amount of absorption of the specific oil is the same regardless of the mode of introduction into the body.

### MORPHINE AND PULMONARY EDEMA

**To the Editor**—When morphine is generally acknowledged to be of considerable benefit in the treatment of pulmonary edema what is the evidence in support of the contention that this drug is contraindicated in those instances in which the edema results from the action of chemical lung irritants such as phosgene?

Lieutenant M. C. A. U. S.

**ANSWER**—Morphine may be of benefit in the treatment of some instances of incipient pulmonary edema. However there is no adequate evidence that morphine is of benefit in a frank pulmonary edema from any cause especially if cyanosis (hypoxia) is present. The consensus is against the use of morphine in the treatment of pulmonary edema due to chemical irritants. Most authors state definitely that morphine is contraindicated in pulmonary edema due to phosgene.

In commenting on this subject Sollmann (*A Manual of Pharmacology* ed 6 Philadelphia W. B. Saunders Company).



1942, p. 176) recommends that the use of morphine be kept to a minimum (15-20 mg) and avoided altogether if possible. However, he also emphasizes the importance of rest to the gas casualty and states that the restless and excited patients must have morphine. He points out the fact that small doses of morphine may improve the efficiency of respiration and check coughing that would otherwise add further trauma to the injured lung.

No drug that is a respiratory depressant should be given to the cyanotic patient with pulmonary edema unless required for the relief of severe pain or to prevent the necessity of using physical restraint.

#### PROBABLE POLYCYTHEMIA VERA

*To the Editor*—A white man aged 30 complains of headache, vertigo and red appearance of the face of about a year's duration. He takes two or three "Broma Seltzers" and several acetylsalicylic acid tablets a week for relief but no other drugs. Essential features of the examination are a reddish, slightly cyanotic appearance of the skin, especially of the face and hands and similar appearance of the mucosa. The blood pressure is 150/90. The retinal veins are full. The weight is 210 pounds (95 Kg.), the height 5 feet 8 inches (173 cm). He is moderately obese. The heart and lungs are normal. There is a somewhat pendulous abdominal wall but no hepatic or splenic enlargement. Urinalysis and blood Wassermann reaction are negative. Hemoglobin is 120 per cent, red blood count 6,950,000, white blood count 4,700. The differential is normal. Hematocrit (Haden) is 82 per cent with normal control 50 per cent. Coagulation time is four minutes. Information is requested as to whether polycythemia vera is indicated, as no splenomegaly is present. Is splenomegaly necessary for this diagnosis? My feeling is that the one chief requirement in the diagnosis of this disease is splenomegaly. No blood spectroscopic examination has as yet been done to consider a drug or other toxic cause. High altitude is not involved. There is no heart disease. The patient is outdoors most of the time. Although he does some gasoline motor repairs, he does it so infrequently as to make carbon monoxide intoxication unlikely. What further tests should be done for accurate diagnosis of the cause of this polycythemia? Please give best methods of treatment applicable. If an iron deficient diet is indicated, please incorporate in the reply, as no proper library is available here for reference.

M. D., New Jersey

*ANSWER*—The patient has a reddish cyanotic complexion and a cyanotic mucosa. He also has an elevated red blood cell count and decidedly increased hematocrit reading. These are two of the cardinal features for diagnosis of polycythemia "vera." About one fourth of all polycythemia patients fail to show splenomegaly. In some careful studies in a series by Wintrobe 10 per cent of the subjects failed to show splenomegaly. Therefore persons may have this disease without a palpable spleen. The patient described is obese and it might be difficult to determine slight enlargement of the spleen in such a person. In some cases it is of interest to have a flat x-ray film taken of the abdomen to see if some splenic enlargement can be determined. It should be pointed out that it is unusual to find leukopenia in polycythemia as described in this case. However, the increased hematocrit reading as well as the increased red blood cell count would make the diagnosis probable, and therapy might be instituted on the assumption that this is a true polycythemia "vera" or erythremia.

There are four acceptable methods of treatment and they have all given good results in some cases and failed in others. Therefore each therapeutic trial must be judged individually.

1 Irradiation either to the spleen, bone marrow or by spray. Most x-ray therapists are acquainted with these methods.

2 Acetylphenylhydrazine (symmetrical) 0.1 Gm daily for a week and then this medication given at less frequent intervals until the red blood cell count is between 5 and 6 million. The patient is then kept on a maintenance dose.

3 Phlebotomies, 500 cc of blood being removed once a week for two or three weeks and the treatment repeated as indicated. Dameshek (*THE JOURNAL*, Sept. 14, 1940, p. 950) also includes an iron deficient diet requiring the avoidance of red meat, meat soup, liver, eggs, rye bread and brown cereals. Not all hematologists agree with the necessity for maintaining patients on an iron deficient diet.

4 The use of solution of potassium arsenite as described by Forkner and his co-workers (*Arch Int Med* 51:616 [April] 1933).

In the last analysis the physician will have to choose the therapeutic procedure best fitted for the particular patient and the physician's facilities. Moreover, he should be guided not so much by the blood count as by the patient's symptoms. It would be a good idea for the patient to avoid Bromo-Seltzer. Where it is difficult to obtain x-ray therapy or in cases in which the physician is unacquainted with the use of acetylphenylhydrazine or solution of potassium arsenite the safest procedure would be phlebotomies, using the patient's symptoms and blood count as guidance for the frequency of this measure.

#### EXOSTOSIS FOLLOWING REDUCTION OF DISLOCATED HIP

*To the Editor*—On March 13, 1943 a coal miner sustained a traumatic injury to the muscles of his left thigh including a dislocation of his hip joint on the same side. At the time an x-ray examination showed no damage either to the femoral head or to the acetabulum. Reduction was accomplished fairly easily. Now, six months later, in view of this man's continued inability to get about and work, I made a check up picture of him. It shows a good end result on the reduction—symmetrical, no evidence of fracture or any atrophy. It does show, however, a spur, an exostosis, coming off the upper end of the femur directed toward the ischium. This extends out into the muscular spaces. I should like to know if his injury entered into the cause of this extra bone growth. How did this come to be there? Can his disability on account of this exostosis not be excluded from the incident of his injury?

Charles M. McKee, M.D., Verda Ky

*ANSWER*—It is not unusual to see something of the sort described in the inquiry develop late after reduction of a dislocated hip, even though the reduction was successful and the x-rays immediately or soon after showed normal anatomic relationship of the head of the femur and the acetabulum. In these cases, for some unknown reason, there occurs bone formation along portions of the capsule, and this process may go on for some months and there is no way to predict just how extensive it will be. No blame can be attached to the method of reduction. The same unfortunate process occurs with fair frequency following dislocations of the elbow. In the hip joint, if the process is not too widespread in the capsule and the new bone is mature, the bone formation can be dissected away. However, it is important that no surgical intervention be instituted until the process is completed and the new bone matured and hard. It is difficult to say just when that period is reached. Certainly a year should elapse before any such dissection is attempted. If done earlier, the bone may promptly reform. A guarded prognosis should be given. In cases in which the involvement is extensive, the condition may eventuate in pronounced disability due to loss of almost all motion. If the patient the subject of the inquiry is handicapped by this bony formation confined to the femur, it should be removed. It probably has to do with inferior border of the capsule and the periosteum of the femur. The formation described is most probably due to the injury if x-ray films taken at the time of reduction showed nothing of the kind present.

#### EFFECTS OF MENSTRUATION, PREGNANCY AND ANESTHESIA ON PERMANENT WAVES

*To the Editor*—In *Queries and Minor Notes* [*The Journal*, July 31, 1943, p. 981], granted that the reference to the figures of Basler are pertinent to the feature of the follicle and the pull required to epilate the hair of the forearm, it appears far fetched to favor the possibility of effect of menstruation, pregnancy and anesthesia on permanent waving. Hair keratinized and erupted beyond the limits of the hair follicle is outside the sphere of influence of anything taking place inside the body. Only the fresh growing part of the hair, the part of the hair within the depth of the follicle, the part of the hair not yet keratinized is under the influence of body states, as menstruation, pregnancy and so on.

Hairdressers have successful salons in hospitals. The permanent waving department is busy. For many years I reviewed the opinions of a board of hairdressers on problems of thousands of hairdressers throughout the country. A great number of professional hairdressers believe that internal conditions affect the success of permanent waving. Few agree that the hair is outside the influence of immediate, recent or concurrent body changes.

The answer to the query permits the careless hairdresser, the hurried technician, the cut rate shop operator too ignorant to give test curls to avoid responsibility for failure of permanent waving. The current practitioners of permanent waving lack fundamental training. They ignore the influence of the molecular structure of hair on permanent wave technique. The work of Astbury, of Astbury and Woods and of Speakman is rarely mentioned in the textbooks of the trade. The chapter on Elastic Properties of Hair by Astbury in Dr. Agnes Savill's book *The Hair and Scalp* is enlightening.

Each problem of hair in relation to permanent waving can be duplicated by substituting elastic ribbon for hair strands. The actual causes for failure, too large sections of hair, too small sections of hair, too much alkali, too little, too tight winding, too loose, too much time of steaming, too little, these and others were tested under experimental conditions with stop watch, thermometer and tension apparatus. Failure and success depended on technique and attention to detail. The rubber ribbon was not affected by menstruation, by pregnancy or by anesthesia. The rubber ribbon studies were supplemented over a period of months by control experiments of permanent waving of hair removed by hairdressers from the heads of their patrons. The results were independent of the status of the patron. The results of the experiments supported the studies of Astbury. The molecular structure of the hair explains the technique and the art of permanent waving.

Nail, hoof, feather, horn, shell resemble hair as far as the molecular structure is concerned. The erupted nail resembles erupted hair in many respects. It should be possible to compare the reactions of nail and hair. Would menstruation, pregnancy and anesthesia have any effect on the erupted portion of the nail?

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## PRIMARY DYSMENORRHEA

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Dysmenorrhea occurs in approximately 35 per cent of menstruating women.<sup>1</sup> Primary dysmenorrhea is characterized by painful menstruation in the absence of demonstrable pelvic disease and is thus differentiated from secondary dysmenorrhea.

Primary dysmenorrhea commences with the menarche in 65 per cent<sup>2</sup> and a few years later in 35 per cent. Anovulatory cycles have been suggested as the basis for the early painless periods in the later group. The distress starts with the menstrual flow and consists of lower abdominal cramps which may or may not be associated with backache, headache, nausea and vomiting. It persists through one or two days of the flow. The woman with primary dysmenorrhea may complain of prodromal irritability, backache, headache and gastrointestinal upsets. The dysmenorrhea ordinarily disappears, or is considerably relieved, after the birth of the first child. After the age of 30 in the nulliparous woman the dysmenorrhea becomes irregular and of lessened intensity, and near the menopause it usually disappears.

Taylor<sup>3</sup> concludes that "normal menstruation should be free from all pain and discomfort and should not cause depression of physical and mental activity." In the light of evidence presented later, one would question her definition of "normal menstruation." Hamblen<sup>4</sup> has used various estrogenic substances as substitutional therapy in primary dysmenorrhea and has reported encouraging results. He believes that such patients suffer from a relative estrogen deficiency resulting in overactivity of the sympathetic nervous system with production of vasoconstriction and pain. Kurzrok<sup>4</sup> observed that primary dysmenorrhea does not occur without ovulation, a very significant fact which has not been entirely appreciated.<sup>4a</sup> Other investigators have attributed primary dysmenorrhea to progesterone<sup>5</sup> and estrogen imbalance as well as to other

glandular deficiencies. Davis<sup>6</sup> claims to have evidence of presacral neuritis in 70 per cent of his patients.

Recent experimental work has elucidated somewhat the physiology of primary dysmenorrhea. Sturgis and Albright<sup>7</sup> were able to produce proliferative endometrium (endometrial biopsy) just prior to menses by intramuscular estradiol benzoate (progyon B), and the succeeding periods were painless. Later they<sup>8</sup> reported identical results with diethylstilbestrol and estradiol dipropionate. In the course of 209 menstrual periods treated in this manner, relief was obtained 147 times (70 per cent). This work was supported in selected cases by endometrial biopsies which revealed no evidence of ovulation when the therapy had abolished pain. However, it is apparent that any method of therapy designed to inhibit ovulation for the relief of painful menstruation has no permanent clinical value. Sturgis found that when estrogenic therapy was given for primary dysmenorrhea for several months the pain returned in spite of continuance of the treatment. He suggests that artificially produced anovulatory menses continued over any length of time may result in permanent disturbance of the pituitary-ovarian relationship. Confirmatory work with estrogens has been reported by other investigators.<sup>9</sup>

Moir<sup>10</sup> and Wilson and Kurzrok<sup>4</sup> by use of small sterile rubber balloons attached to a kymograph studied intrauterine pressure changes at various times during the menstrual cycle in human subjects. In women who were menstruating normally, as judged by the regularity and amount of flow, they found that, four to seven days after a period, small rapid uterine contractions (three to five per minute) commenced and persisted for ten to fourteen days. Following this "follicular phase," contractions of deeper amplitude and longer duration (one to two minutes) appeared. These contractions ("luteal phase") increased in amplitude and reached a maximum height on the first two days of the menses. According to Kurzrok<sup>4</sup> the intrauterine pressure changes in women with primary dysmenorrhea are the same as in women with normal menstruation. However, in an anovulatory cycle (demonstrated by endometrial biopsy) there is complete lack of the larger, less frequent contractions ("luteal phase") and a prolongation of the smaller, more rapid ("follicular phase").

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<sup>1</sup> Crossen H S and Crossen R J. Diseases of Women, ed. 9. St Louis: C V Mosby Company, 1941, p 780.

<sup>2</sup> Hirst D V, Hamblen E C and Cuyler W K. J Clin Endocrinol. 2: 442-446 (July) 1942.

<sup>3</sup> Taylor Helen M. J Obst. & Gynec Brit. Emp. 49: 341-367 (Aug) 1942.

<sup>4</sup> Wilson Leo and Kurzrok Raphael. Endocrinology. 23: 79-86 (July) 1938.

<sup>4a</sup> Reassurance and simple analgesic remedies will relieve most primary dysmenorrhea.

<sup>5</sup> Hays E D. J Misouri M A. 37: 418-420 (Oct.) 1940. Novak, Emil. (Gynecologic Problems of Adolescence) J A M A. 117: 1950-1953 (Dec 6) 1941.

<sup>6</sup> Davis Albert. Proc. Roy. Soc. Med. 29: 931-947 (June) 1936. cited by Smith-Fremont M. New England J. Med. 226: 795-798 (May 14) 1942.

<sup>7</sup> Sturgis S H and Albright Fuller. Endocrinology. 26: 68-72 (Jan) 1940.

<sup>8</sup> Sturgis S H. New England J. Med. 226: 371-376 (March 5) 1942. Sturgis S H and Meigs J V. Surg. Gynec. & Obst. 75: 87-92 (July) 1942.

<sup>9</sup> Greenblatt R B. J. South Carolina M A. 38: 62-66 (March) 1942. Boynton Ruth E. and Wintner Nora. The Treatment of Primary Dysmenorrhea with Estrin Glycuronide. J A M A. 119: 122-124 (May 9) 1942.

<sup>10</sup> Moir Chas. Proc. Roy. Soc. Med. 29: 950-952 (June) 1936.

contractions throughout the intermenstrual period. Table 1 summarizes their findings. In a recent review of primary dysmenorrhea, Fremont-Smith<sup>6</sup> recognizes the importance of the experimental work of Sturgis,<sup>11</sup> Moir<sup>10</sup> and Wilson and Kurzrok<sup>12</sup> and believes that the strong "luteal phase" contractions during the first two days of the menses are involved in the production of pain. Bickers<sup>13</sup> holds a similar point of view.

#### MATERIAL

During the past several months we have observed 41 female university students with dysmenorrhea of such severity as to incapacitate them. The age distribution, marital status, gravidity and pelvic findings are given in table 2. Sixteen of these patients had previously received glandular therapy and 2 had had dilation

TABLE 1—*Uterine Motility (Kurzrok)*

	Tonus	Follicular Contractions	Luteal Contractions	Response to Pituitary Injection
Normal	Increased in follicular phase, decreased in luteal phase	+	+	Strong in luteal phase
Primary dysmenorrhea	Same	Same	Same	Same
Ovulatory menses (biopsy)	Same	Same	Same	Same
Anovulatory menses (biopsy)	Increased throughout the cycle	Same	Absent	Absent

TABLE 2—*Primary Dysmenorrhea Clinical Data*

		Patients	
		Number	Per Cent
Age, years			
15-17		2	4.8
18-21		20	48.7
22-25		7	17.0
Over 25		12	29.2
Married		15	36.5
Nulligravidity		40	97.5
Pelvic examination			
Uterus	Normal anterior	22	53.6
	Retroverted	14	34.1
	Decidedly anteverted	3	7.3
	Undeveloped	2	4.8
Adnexa	Normal	41	100.0

Note the lack of a consistent anatomic defect. Infertility was a complaint by four married patients, and examinations of their husbands disclosed sterility.

and curettage with little or no relief, 9 had had elective appendectomies. In 18 out of 20 patients the administration of diethylstilbestrol (1 mg daily for twenty days following the cessation of menstrual bleeding) resulted in the complete relief of pain at the next period. The two failures missed the expected period and one month later experienced typical painful menstruation a phenomenon previously observed by Sturgis.<sup>11</sup> In 31 of these women, 55 endometrial biopsies were obtained two to four days before the onset of menses. Table 3 shows the microscopic results of these biopsies before and after treatment. In 2 patients severe uterine bleeding followed the administration of diethylstilbestrol and

in 1 case hospitalization for supportive transfusion was necessary. The dysmenorrhea was treated by one of the prescriptions given in table 3.

#### COMMENT

It is now generally agreed that there is no consistent anatomic lesion in patients suffering from primary dysmenorrhea and that earlier investigators have erred

TABLE 3—*Prescriptions for Dysmenorrhea*

Prescription 1		Prescription 2	
Acetylsalicylic acid	5 grains	Camphor monobromate	½ grain
Codeine	½ grain	Atropine sulfate	1/100 grain
Ergotone	1 grain	Papaverine hydrochloride	¼ grain
Atropine sulfate	1/100 grain	Acetophenetidin	3 grains
Made into one capsule		Acetylsalicylic acid	3 grains
		Made into one capsule	

It is believed that ergotone aids the relief from cramps by increasing intrauterine tone (Kurzrok, Moir and Bickers) and thus prevents the uterus from filling up, a condition which leads to uterine spasm and pain. The symptomatic relief obtained through these analgesics (prescriptions 1 and 2) is shown in table 4.

in attributing the cause directly or indirectly to some obvious or obscure anatomic finding, e. g. a retroverted anteverted or infantile uterus, cystic ovaries, presacral neuritis, defective uterine musculature or disturbed innervation. The presence of anatomic defects is apparently incidental and primary dysmenorrhea must be explained on some other basis.

The pain experienced in primary dysmenorrhea is evidently due to uterine contractions. This point of view is confirmed by the experimental work of Moir,<sup>10</sup> Kurzrok<sup>4</sup> and Bickers,<sup>13</sup> who noted that maximum discomfort is experienced during the first two days of the menstrual period at the time of the strongest luteal contractions. Clinically, one can reproduce the typical cramplike pains of primary dysmenorrhea by inserting a sound within the uterus. Women have also noticed the similarity of these pains to labor pains and after-pains.

Kurzrok<sup>4</sup> first observed that ovulation is a necessary precursor to painful menses. The presence of secretory endometrium (suction biopsy) in our patients, and the similar report of Sturgis and his co-workers<sup>11</sup>

TABLE 4—*Primary Dysmenorrhea Results of Therapy in Twenty-Seven Patients Treated with Analgesics*

	Distribution of Symptoms		Patients with Complete Relief		Patients with Partial Relief		Patients with No Relief	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Abdominal cramps	27	100.0	18	66.0	9	33.3	0	0.0
Backache	18	66.6	14	77.7	3	16.6	1	5.5
Headache	7	25.9	5	71.4	1	14.2	1	14.2
Gastrointestinal upsets	15	55.5	13	86.6	1	6.6	1	6.6
Syncope	1	3.7	1	100.0	0	0.0	0	0.0

Prescription 1 gave the most consistent relief from symptoms.

support this position. It is also true that the suppression of ovulation by diethylstilbestrol (or other estrogens) prevents the development of secretory endometrium and results in painless menstruation in patients with primary dysmenorrhea.

It is an old clinical observation that primary dysmenorrhea is often completely or partially relieved by childbearing. It is believed that this is due to freer

11 Sturgis and Albright.<sup>7</sup> Sturgis.<sup>8</sup> Sturgis and Meigs.<sup>8</sup>  
12 Wilson, Leo, and Kurzrok, Raphael. *Endocrinology* 27: 23-28 (July) 1940.  
13 Bickers, William. *Primary Dysmenorrhea*, Virginia M. Monthly 69: 423-428 (Aug.) 1942.

egress of the menstrual discharge into the vagina through the parous cervix. The accumulation of menstrual fluid within the uterine cavity stimulates "luteal" contractions until the threshold is reached and pain results.<sup>14</sup> Instrumental dilation of the cervix cannot produce any permanent enlargement of the cervical canal. Obviously there is considerable difference in the permanent effect of a 10 centimeter fetal head and a 10 millimeter Hegar dilator. The Pozzi or Dudley operation (operative enlargement of the cervical canal) or the wearing of a stem pessary are advisedly condemned but it is admitted that they do relieve dysmenorrhea, presumably by inducing permanent enlargement of the cervical canal. It has been suggested that operative or parturient dilation of the canal destroys the nerve endings or ganglion cells within the cervix. The existence of ganglion cells within the cervical substance is open to question although they are readily found within

## TREATMENT

Physicians err in treating primary dysmenorrhea on the principle that it is caused by organic disease or endocrine deficiency. Frequently such patients change from one physician to another and obtain a separate diagnosis from each. The emphasis on organic or functional defects creates a poor mental attitude. In addition, they have frequently approached the menarche already conditioned for a serious ordeal by overzealous relatives and friends. The first objective in treatment should be to assure the patient that she is absolutely normal and to explain in simple terms the basic physiology of menstrual distress.

The second therapeutic objective is the relief of pain. Usually this can be done with simple analgesics, particularly after the patient realizes the nature of her complaint. Prescriptions 1 and 2 recommended in table 4 are for the more severe cases. As a rule it is necessary

TABLE 5—Primary Dysmenorrhea Results of Administration of Diethylstilbestrol

Patient	First Menstrual Period		Treatment Diethyl stilbestrol	Second Menstrual Period		Third Menstrual Period	
	Endometrial Biopsy	Pain		Endometrial Biopsy	Pain	Endometrial Biopsy	Pain
M S	Secretory	Present	+	Proliferative	Absent	Secretory	Present
D R	Secretory	Present	+	Proliferative	Absent	Secretory	Present
T J	Secretory	Present	+	Proliferative	Absent	Secretory	Present
M S	Secretory	Present	+	Proliferative	Absent	Secretory	Present
E H	Secretory	Present	+	Proliferative	Absent*	Secretory	Present
S R	Secretory	Present	+	Proliferative	Absent	Secretory	Present
E Y	Secretory	Present	+	Proliferative	Absent	Secretory	Present
S E	Secretory	Present	+	Proliferative	Absent	Not done	Present
A. B	Secretory	Present	+	Proliferative	Absent	Not done	Present
A. M.	Secretory	Present	+	Proliferative	Absent	Not done	Present
V M	Secretory	Present	+	Proliferative	Absent	Not done	Present
R S	Secretory	Present	+	Proliferative	Absent	Not done	Present
F M	Secretory	Present	+	Proliferative	Absent†	Not done	Present
R. H	Secretory	Present	+	Proliferative	Absent	Not done	Present
F R	Secretory	Present	+	Proliferative	Absent	Not done	Present
M H	Secretory	Present	+	Proliferative	Absent	Not done	Present
J F	Secretory	Present	+	Proliferative	Absent	Not done	Present
M O	Secretory	Present	+	Proliferative	Absent	Not done	Present

\* Severe bleeding necessitated bed rest for two days.

† Severe uterine bleeding necessitated hospitalization for transfusions in 13 other patients endometrial biopsy disclosed secretory endometrium which was followed by painful menses.

the parametrial tissues, a location too remote to be affected by cervical dilation.

After the age of 30 years there may be incomplete shedding of the menstrual mucosa, and ovulatory cycles occur irregularly so that painful menses become less severe and less frequent. Except in isolated instances as women approach the menopause menses are anovulatory and painless. However, some pain may be experienced by women with anovulatory cycles, provided bleeding is sufficient to distend the uterine cavity and stimulate contractions of large enough amplitude.

In primary dysmenorrhea, associated symptoms of backache, nausea, vomiting and headache can hardly be explained on an organic basis. Nausea, vomiting and spells of syncope are probably the nervous reaction of the patient to the pain. The backache may be produced by pelvic congestion or relaxation of pelvic joints. Premenstrual tension, as evidenced by abdominal pain, irritability, headache, backache and nervousness, is also on a psychogenic basis and usually does not appear until some years after the patient has been suffering from dysmenorrhea.

only to relieve the pain for the first and second days of the menstrual period. If the patient can be carried along until she has borne a child or until the age of 30 years, medical treatment becomes less essential.

In our opinion operations such as hysterectomy, uterine suspension and presacral sympathectomy are unnecessary in the treatment of primary dysmenorrhea if the patient is properly handled. It is important to remember that encouraging results can be obtained in such patients with almost any kind of glandular product (even with placebos) owing to their psychotherapeutic effect.

## CONCLUSIONS

1 Women with primary dysmenorrhea have no consistent anatomic lesions or endocrine deficiencies.

2 Ovulation and a nulliparous cervix are two essential factors in producing primary dysmenorrhea, and they result in uterine distention which stimulates contractions of large enough amplitude to produce cramping pain.

3 The suppression of ovulation by estrogens to produce painless menses is of experimental interest but of questionable value and possibly dangerous.

SIGNIFICANCE OF PHLEBOGRAPHY  
IN PHLEBOTHROMBOSIS

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Although visualization of the venous system is frequently referred to as venography, we believe that, since this is a hybrid word, being derived from both Latin and Greek, phlebography should be used because it has a true Greek origin *φλέψ*, *phleps*, vein, and *γράφειν*, *graphein*, to write

Few complications in medicine and surgery are as unpredictable, treacherous and dramatically tragic as the thromboembolic phenomena. Fatal pulmonary embolism in a patient apparently convalescing uneventfully and preparing to leave the hospital is a fearsome and pathetic catastrophe. Whereas the mortality rate in surgical patients has steadily decreased since the introduction of asepsis and continued improvement in surgical technic and anesthesia as well as the more recent development of the sulfonamides, little has actually been accomplished in the control of pulmonary embolism until relatively recently. Indeed there is some statistical evidence to support the belief that the thromboembolic incidence is increasing.<sup>1</sup> That the condition occurs with sufficient frequency to deserve the assiduous and intensive efforts of investigators has been clearly demonstrated by repeated observations. Thus Snell<sup>2</sup> at the Mayo Clinic and Dietrich<sup>3</sup> in Germany found that pulmonary embolism was considered the cause of death in approximately 8 per cent of all autopsies. In a statistical consideration of this subject Gibbon<sup>4</sup> was able to express the incidence of fatal pulmonary embolism as follows: Of every thousand patients admitted to the surgical wards, 1 will die of pulmonary embolism, of every thousand operated on, 2 will die from pulmonary embolism, and of every hundred postoperative deaths, eight will be due to pulmonary embolism. Other investigators<sup>5</sup> have found that of every 17 to 20 patients with clinical manifestations of thrombophlebitis 1 will die of pulmonary embolism and 1 in every 6 to 12 who had previous nonfatal embolism will die of a subsequent embolus. These figures demonstrate forcefully that the incidence and consequence of thromboembolic phenomena are of sufficient extent to deserve serious consideration.

Until recently, combative measures in pulmonary embolism have been singularly ineffective. The Trendelenburg operation, which consists of pulmonary embolectomy, has saved relatively few patients with massive pulmonary embolism and cannot be expected to improve the mortality appreciably. Accordingly it became necessary to attack the problem from another approach. This consists essentially in prophylaxis.

Since an embolus has its origin in a thrombus, prophylaxis should begin with measures designed to prevent intravascular thrombosis. No attempt, however, will be made here to discuss in detail this phase of the subject, as it has been adequately reviewed in previous publications.<sup>6</sup> Suffice it to say that, whereas such measures will undoubtedly decrease the incidence of thrombosis, they do not completely prevent its occurrence. Even the use of anticoagulants such as heparin and dicumarol have not been found completely satisfactory. Heparin has the disadvantages of being costly, requiring continuous or repeated intravenous injections and maintaining a constant anticoagulant effect with difficulty. Moreover, cases of pulmonary embolism during heparinization have been observed.<sup>7</sup> Dicumarol, which is still in the experimental stage, also has distinct disadvantages. In view of the wide variations in susceptibility to the drug in different patients, the definite danger of hemorrhage associated with its use and the lack of conclusive evidence of its effectiveness for the present, dicumarol "cannot be regarded as a safe, efficacious and satisfactory prophylactic or therapeutic agent in intravascular thrombosis."<sup>8</sup> Whereas anticoagulants will prevent blood coagulation, their routine use prophylactically is not justified except possibly in the unusual cases in which there is a thrombosing tendency which can be determined by a history of previous thrombosis or a family history of repeated thromboses. Once a thrombus has formed, the use of anticoagulants will not protect against its detachment even though the blood coagulability is decreased. These realistic considerations permit comprehension of the rationale of prophylactic therapy of pulmonary embolism once intravascular thrombosis has occurred. Accordingly the direction of attack must be focused on the prevention of fragments of the thrombus from reaching the pulmonary vascular channels. Obviously the logical means of doing this is by blocking or ligating the venous channel central to the site of the thrombus.

That the value of proximal venous ligation in intravascular thrombosis has long been realized is shown by its interesting historical development. One of the earliest observers to realize the rationale of this procedure was Hunter,<sup>9</sup> who in 1793 successfully applied it clinically. However, Hunter apparently did not actually perform venous ligation but attempted to accomplish the same purpose by placing compression "upon the part of the vein just above the suppuration." Lee<sup>10</sup> in 1865 was possibly one of the earliest actually to ligate a vein above the thrombotic process. Approximately two decades later Kraussold<sup>11</sup> recorded the successful ligation of the femoral vein in a patient with suppurative thrombophlebitis following thigh amputation, and Zaufal<sup>12</sup> reported the successful ligation of the internal jugular vein in the treatment of pyemia originating in the internal ear. Apparently Freund<sup>13</sup> was one of the earliest surgeons to apply

6 Ochsner and DeBakey, footnotes 1 and 18

7 Fine, Jacob, Frank, H. A. and Starr, Arnold. Recent Experiences with Thrombophlebitis of the Lower Extremity and Pulmonary Embolism. The Value of Venography as a Diagnostic Aid, *Ann Surg* 110: 574 (Oct.) 1942

8 DeBakey, Michael. Dicoumarin and Prophylactic Anticoagulants in Intravascular Thrombosis, editorial, *Surgery* 13: 456 (March) 1943

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11 Kraussold, H. Ueber eine Operative Methode zur Bekämpfung beginnender Pyämie, *Arch f klin Chir* 22: 965, 1878

12 Zaufal, H. Sinusthrombose, *Prag med Wehnschr* 5: 517, 1890

13 Freund, W. A. Ueber die Methoden und Indikationen der Total extirpation der Uterus, speziell in Bezug auf die Behandlung der Uteruskarzinoms, *Beitr z Geburtsh u Gynak* 1: 343 1898

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1 Ochsner, Alton, and DeBakey, M. E. Thrombophlebitis and Phlebothrombosis, *South Surgeon* 8: 269 (July) 1939

2 Snell, A. M. Relation of Obesity to Fatal Postoperative Pulmonary Embolism, *Arch Surg* 15: 237 (Aug.) 1927

3 Dietrich, A. Einige bemerkenswerte Beobachtungen von Thrombose und Embolie, *Chirurg* 1: 485 (April 15) 1929

4 Gibbon, J. H., Jr. Pulmonary Embolism. Review of Recent Contributions, *Pennsylvania M J* 42: 877 (May) 1939

5 Barker, N. W., Nygaard, K. K., Walters, Waltman, and Priestley, J. T. A Statistical Study of Postoperative Venous Thrombus and Pulmonary Embolism, *Proc Staff Meet, Mayo Clin* 15: 796 (Dec 18) 1940

16 33 (Jan 15) 1941

the method in gynecology. Although the procedures were unsuccessful in preventing a fatal termination, he performed in 1898 ligation and excision of the thrombosed ovarian vein and broad ligament in 2 cases. Perhaps Trendelenburg<sup>14</sup> in 1902 was the first to perform the procedure successfully in a case of puerperal infection. At the first operation he ligated the hypogastric vein, but because the patient continued to have chills he performed a second operation and ligated the ovarian veins. Of interest in this connection is the fact that at this time Trendelenburg expressed the opinion that vena caval ligation should not be considered in these cases because with such extensive thrombosis the procedure would be futile. Nine years later Trendelenburg<sup>15</sup> had apparently changed his mind, as he reported probably the first successful case of vena caval ligation for intravascular thrombosis. Subsequently the procedure was performed by a number of surgeons, as demonstrated by the collected series of 48 cases reported by Krotoski<sup>16</sup> in 1937. More recently Collins and his associates<sup>17</sup> at Tulane University have emphasized its value in suppurative pelvic thrombophlebitis. Ample evidence of the value of proximal venous ligation in intravascular thrombosis has been recorded by numerous other recent reports, which have been reviewed in a previous publication<sup>18</sup>.

Whereas it is now generally agreed that proximal venous ligation is definitive therapy in the prevention of pulmonary embolism, its practical application has been difficult. This is due to the frequent absence of precise criteria in determining or in predicting the possible occurrence of embolism. For this reason, some<sup>18</sup> have advocated routine division of the femoral vein in all patients who have or are suspected of having thrombophlebitis of the deep veins of the lower leg. This attitude may be questioned, for certainly pulmonary embolism infrequently occurs in thrombophlebitis and, when found, as we have previously emphasized, is due to the dislodgment of a coagulation thrombus proximal to the thrombophlebitic segment or to the liquefaction of the clot in suppurative thrombophlebitis. The clot resulting from the inflammatory reaction of the veins in thrombophlebitis is firmly attached to the vein wall and does not become loosened to form an embolus. Unless measures are taken to prevent it, however, a red clot or coagulation thrombus can develop in the vein proximal to the fixed white thrombus where stasis is likely to occur. In such an instance detachment of the red thrombus is possible, but this development can and should be prevented as soon as the thrombophlebitic process is detected.

On the other hand in intravenous clotting unassociated with inflammation of the vein, that is, phlebothrombosis, the clot is of the coagulation variety and is loosely attached to the vein wall, permitting its being loosened easily with the development of embolism.

Patients with thrombophlebitis have definite clinical manifestations such as fever, pain and swelling of the involved extremity, whereas in patients with phlebothrombosis the symptoms and signs are minimal. As previously emphasized,<sup>18</sup> they may have a sense of impending disaster, exhibit a pulse rate out of proportion to anything else and have tenderness over the involved vein. The frequency of the occurrence of venous thrombosis is clearly demonstrated by numerous recent clinical and experimental investigations. Thus Roessle<sup>20</sup> in careful autopsies of 324 consecutive cases found that thrombosis had occurred in the deep veins of the calf in 88 persons over 20 years of age. Of this number 38 also had thrombosis in the femoral vein, in 10 of whom death was due to massive pulmonary embolism. Neumann,<sup>21</sup> in a similar study of 165 unselected patients dying from a variety of causes found thrombosis in 100. In 45 per cent thrombosis was present in the veins of the thigh with evidence of extension from a more distal process. Of the cases with thrombosis, 12 per cent showed massive pulmonary embolism and an additional 34 per cent showed multiple nonfatal emboli. Somewhat similar observations have been made by Bauer,<sup>22</sup> Hunter and his collaborators,<sup>23</sup> Frykholm<sup>24</sup> and others.

These and other reports emphasize the high incidence of the thromboembolic phenomenon and its treacherous nature. The latter feature is illustrated by the fact that frequently the first indication clinically of thrombosis is pulmonary infarction and too often this is fatal. This is especially likely to occur in certain forms of thrombosis. In previous publications we<sup>9</sup> have distinguished between two major types of intravascular thrombosis, namely, thrombophlebitis and phlebothrombosis. In the former the clotting is believed to be the result of injury to the vascular endothelium from mechanical trauma, bacterial invasion or chemical injury, whereas in the latter it may be due to venous stasis and to alterations in the cellular and fluid constituents of the blood that increase the clotting tendency. The clinical significance of this distinction lies in the fact that in thrombophlebitis the clot is usually firmly adherent to the vein wall and is therefore less likely to become detached and to result in embolism. In phlebothrombosis, on the other hand, the thrombus is loosely attached to the vessel and is more likely to cause embolism. Of particular importance also is the more insidious development of phlebothrombosis, and the frequent lack of indicative clinical manifestations of thrombophlebitis, i.e. pain, fever and swelling, are much less pronounced in phlebothrombosis and not infrequently even absent. The patient does not appear so sick in phlebothrombosis as in thrombophlebitis, but restlessness and anxiety in the former are frequently present. For these reasons a precise method of diagnosis of intravascular thrombosis is desirable. Herein lies the importance of phlebography. Much credit is due dos Santos<sup>25</sup> and his son for developing this procedure and directing

14 Trendelenburg F. Ueber die chirurgische Behandlung der puerperalen Pyämie. München med. Wchnschr. 49: 513, 1902.

15 Trendelenburg F. Beckenhochlagerung und Lungenembolism. Prakt. Ergebn. d. Geburtsh. u. Gynäk. 3: 68, 1911.

16 Krotoski J. Zur Venenunterbindung bzw. extirpation bei der puerperalen Allgemeininfektion vom chirurgischen Standpunkt. Chirurg. 4: 425, 1937.

17 Collins Conrad G, Jones Jack R and Nelson Edward W. Surgical Treatment of Pelvic Thrombophlebitis. Ligation of Inferior Vena Cava and Ovarian Veins, a Preliminary Report. New Orleans M. & S. J. 95: 324 (Jan) 1943. Pelvic Thrombophlebitis. A Study of the Etiological Factors from a Statistical Standpoint. ibid. 95: 375 (Feb) 1943.

18 Oschner Alton and DeBakey M E. Therapeutic Considerations of Thrombophlebitis and Phlebothrombosis. New England J. Med. 225: 407 (Aug 7) 1941.

19 Fine Jacob and Sears J B. The Prophylaxis of Pulmonary Embolism by Division of the Femoral Vein. Ann. Surg. 114: 801 (Nov) 1941. Fine Frank and Starr.

20 Roessle R. Ueber die Bedeutung und die Entstehung der Wadenvenenthrombosen. Virchows Arch. f. path. Anat. 300: 180, 1937.

21 Neumann R. Ursprungszentren und Entwicklungsformen der Bein-Thrombose. Virchows Arch. f. path. Anat. 301: 708, 1938.

22 Bauer G. A Venographic Study of Thromboembolic Problems. Acta chir. Scandinav. 84: 1, 1940.

23 Hunter W C, Sneed V D, Robert T D and Snider G A C. Thrombosis of the Deep Veins of the Leg. Its Clinical Significance as Exemplified in Three Hundred and Fifty One Autopsies. Arch. Int. Med. 68: 1 (July) 1941.

24 Frykholm Ragnar. Pathogenesis and Mechanical Prophylaxis of Venous Thrombosis. Surg. Gynec. & Obst. 71: 337 (Sept) 1941.

25 dos Santos J. La phlebographie directe: son rôle technique. premier résultat. J. internat. f. chir. 3: 625, 1942.



attention to its significance. Subsequently Bauer<sup>22</sup> elaborated the technic and emphasized further its value. Since then others<sup>20</sup> have presented further critical evaluation of the procedure and substantiated its value.

The technic of phlebography is so simple that it can be done easily by any one. Moreover, it is a relatively safe procedure. Although untoward effects of diodrast have been reported,<sup>27</sup> we believe that if used properly these can be prevented. The patient is placed on the x-ray table on his back with a 7 by 17 film under his leg and lower thigh. This should be placed so that the popliteal vein will be well visualized on the upper part of the film. A tourniquet is applied to the thigh just below the fossa ovalis and just tight enough to occlude the superficial circulation. This is done in order to shunt the contrast medium from the superficial veins into the deep veins. The leg and thigh are internally rotated in order to separate the shadows of the tibia and fibula and secure unobstructed visualization of the veins (fig 1). Twenty cc of 35 per cent diodrast solution is injected into any vein on the dorsum of the foot or ankle at the rate of 1 cc per second. Twenty seconds after the injection

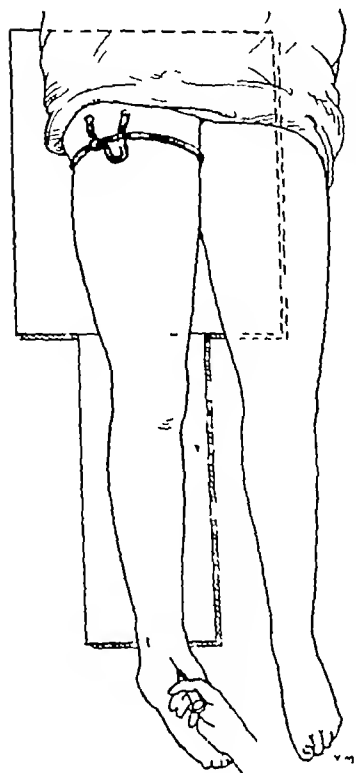


Fig 1—Diagrammatic drawing showing the position of the extremity during phlebography. The extremity is rotated medially to separate the shadows of the tibia and fibula. With the tourniquet placed high on the thigh tightly enough to compress the superficial veins, 25 cc of 35 per cent diodrast solution is injected into a dorsal vein of the foot.

is completed the film is exposed. If the standard supporting the x-ray tube is high enough to permit the tube to be 6 feet above the film, visualization of almost the entire lower extremity with one exposure will be feasible (fig 2). In such an instance a 7 by 17 film is placed under the leg and knee, and a 14 by 17 film is placed above this under the thigh. The injection of the contrast medium is made in a similar manner, except that 25 cc of diodrast solution is injected and the exposure is made approximately thirty seconds after completion of the injection. Occasionally the veins on the dorsum of the foot may be so small that placing a needle into one is impossible. In such instances the external saphenous which is constantly present just behind the external malleolus, is easily found and cannulated.

If the side of involvement is unknown, a single 14 by 17 film is placed behind both legs and lower thighs, and injections are made simultaneously into a dorsal vein on each foot. In this way phlebograms of both

legs and popliteal areas can be obtained at the same time.

Normally both the deep and the superficial veins of the leg and thigh fill with the contrast substance and are clearly delineated on the film. Incomplete or irregular filling or absence of filling is an indication of thrombosis. If the deep veins are thrombosed, the superficial veins fill and are dilated. We have observed, as have dos Santos<sup>28</sup> and Starr, Frank and Fine,<sup>29</sup> that resistance to injection, indicative of increased venous pressure above that expected with a tourniquet at the thigh, is present in cases of thrombosis. If a defect in the venous system is visualized, indicating the presence of a thrombus, steps should be taken immediately to prevent its detachment, either by ligating the vein above the site of the thrombus or by removing the thrombus. The latter method is preferred in cases in which the thrombus is in the femoral and extends into the iliacs.

#### REPORT OF CASES

CASE 1—Mrs H C, aged 44, white, seven months pregnant, went into labor with breech presentation. Craniotomy was necessary for delivery. The postpartum course was so uneventful that she was discharged on the sixth day. She remained in bed at home and on awakening on the morning of the eleventh day noted that her left leg was swollen considerably, ashen in color and painful to touch, especially in the calf. She returned to the hospital, where it was found that her temperature was 99 F and pulse rate 90. There was considerable edema of the leg and thigh with tenderness in the calf and along the course of the femoral vein. Phlebothrombosis was suspected and confirmed by phlebography, which showed that the entire deep venous system was obliterated. Exploration of the femoral vein revealed a typical "red thrombus," which was aspirated from the vein both proximally and distally. Bleeding occurred from both ends of the vessel after aspiration of the clot. The vein was

ligated between the entrance of the vena profunda and the internal saphenous.

The patient remained without further symptoms after the ligation.

Lawen,<sup>30</sup> Kulenkampf,<sup>31</sup> Lange,<sup>32</sup> Fründ<sup>33</sup> and others have advocated various types of thrombectomy in the treatment of these cases. If a defect in the superficial venous system, the deep system or both is visualized, immediate operation should be done in order either to ligate the involved

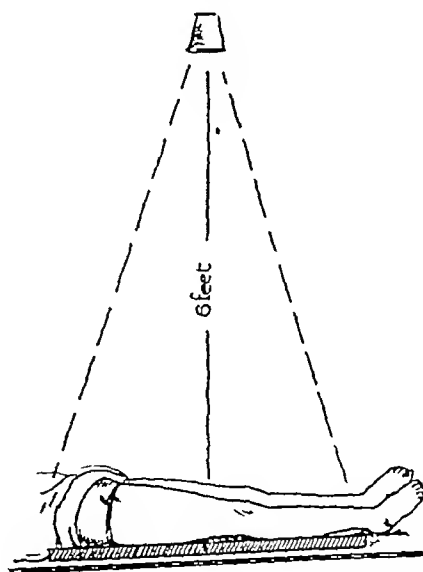


Fig 2—Diagram showing the method of visualization of the venous system of the entire lower extremity with one exposure. By employing a tube film distance of 6 feet in which parallel rays will reach the film it is possible, with two films placed in tandem to visualize the venous system of the entire lower extremity.

vein above the thrombus or to remove the clot and ligate the vein, so that detachment of the clot with the development of embolism can be prevented. There is usually some edema and cyanosis of the extremity following ligation, which responds well to procaine hydrochloride sympathetic block and elevation. The

28 dos Santos, R. Phlebographie d'une veine cave inferieure suturee J d'urol 39 586 1935

26 Dougherty, John and Homans, John. Venography. A Clinical Study, Surg. Gynec. & Obst. 71 697 (Dec.) 1940. Lindblom, K. Phlebographische Untersuchung des Unterschenkels bei Kontrastinjektion in eine subkutane Vene, Acta radiol. 22 288, 1941. Welch, C. E. Faxon, H. H., and McGahay, C. E. Application of Phlebography to Therapy of Thrombosis and Embolism, Surgery 12 163 (Aug) 1942. Fine, Frank and Starr.  
27 Goldburgh, H. L. and Baer, Samuel. Death Following Intra venous Administration of Diodrast, J. A. M. A. 118: 1051 (March 28) 1942. Homans, John. Thrombosis as Complication of Venography (Using Diodrast), ibid 119 136 (May 9) 1942. Naterman, H. L., and Robins, S. A. Cutaneous Test with Diodrast to Predict Allergic Systemic Reactions from Diodrast Given Intravenously, ibid 119 491 (June 6) 1942.

tenderness over the thrombosed veins remains for a week or ten days and then subsides. There is usually a slight rise in temperature for a few days postoperatively.

**CASE 2.**—Mrs M C., aged 59, white, admitted to the surgical service, complained of a recurrent left femoral hernia which had been repaired three years previously, only to recur three weeks prior to admission. With the exception of the hernia and moderate obesity, the physical examination and complete laboratory work-up were normal for a person of her age. A rather extensive hernia was repaired and the postoperative course was uneventful and afebrile until the seventh day. At this time an unaccountable fever occurred which persisted for two days. On the ninth postoperative day she complained of pain in the left heel. Tenderness was noted on pressure in the left calf, and pain was present in the calf on dorsiflexion of the foot. There was no swelling or discoloration of the extremity. Phlebothrombosis was suspected, and phlebography revealed the presence of a clot in the deep veins of the leg (fig 3). Ligation of the femoral vein was done immediately distal to the internal



Fig 3.—Phlebogram in case 2 showing normal filling of the dilated superficial veins of the upper leg and the deep and superficial veins of the thigh but an absence of filling of the deep veins of the leg indicating the presence of a clot in this area.

saphenous. We believe, contrary to the opinion of Fine and his co-workers, who prefer to ligate just distal to the vena profunda, that generally all of the deep circulation should be occluded.

**CASE 3.**—A G., a white man aged 59, was admitted to the hospital following a crushing injury in which he sustained a simple fracture of the right femur and fibula. Physical examination and laboratory studies were otherwise normal. The fracture was reduced by traction with a Steinmann pin inserted through the upper tibia, and a spica cast was applied. Three days later he developed sudden severe chest pain fever to 103 F

29 Starr Arnold Frank H A and Fine Jacob The Venographic Diagnosis of Thrombophlebitis of the Lower Extremities J A M A 118: 1192 (April 4) 1942

30 Lawen A Thrombectomy in Venous Thrombosis and Arterio-

pasm Internat Abstr Surg 65: 348 1937

31 Kulenkampf D Die Verhütung schwerer oder tödlicher Embolien

durch Ausraumung der Vena iliaca Zentralbl f Chir 62: 1258 1938

32 Lange K Beitrag zur operativen Behandlung der blinden Vene

thrombose Zentralbl f Chir 65: 2422 1938

33 Frund J Thrombektomie als Prophylaxe gegen Lungenembolie

Zentralbl f Chir 64: 1202 1935

and a pulse rate of 100. Examination and a portable chest x-ray film gave evidence of a pneumonic process at the right base. He was treated unsuccessfully with sulfathiazole and specific type VII pneumococcus serum for eleven days. At this time he again had sudden severe chest pain with elevation of pulse and temperature and pronounced dyspnea. He also com-

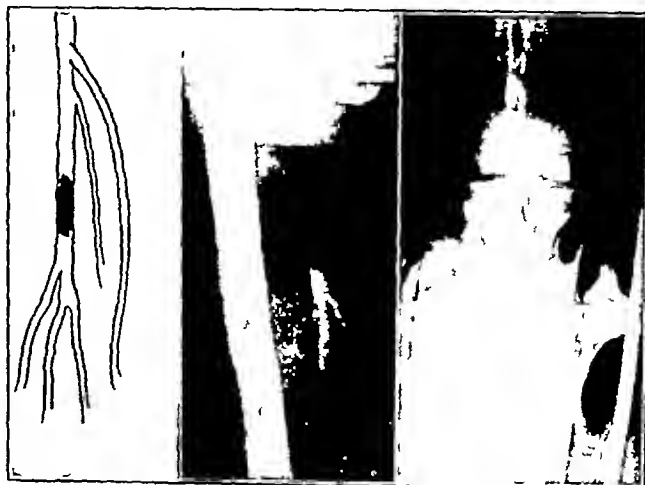


Fig 4.—Phlebogram in case 3 showing filling of the deep and superficial veins of the leg, popliteal area and lower thigh with a defect in the deep veins of the mid thigh.

plained for the first time of pain in the right thigh. Phlebothrombosis was suspected. The cast was removed and a phlebogram made (fig 4). A defect was visualized in the femoral vein, and ligation was done. Since this time he has been afebrile and has had a normal pulse and no respiratory symptoms or signs.

It is obvious, then, that this patient had phlebothrombosis and two attacks of pulmonary infarction. This case illustrates that not all pulmonary infarctions are fatal. Even though almost three fourths of the patients with pulmonary embolism survive, the fact that in 30 per cent of patients the embolism is massive enough to be fatal emphasizes the potential gravity of every case of phlebothrombosis.

**CASE 4.**—Interestingly enough, this patient also had pulmonary infarction, which was treated originally as a pneumonia. O D, a Negro woman aged 29, was admitted to the gynecology ser-



Fig 5.—Bilateral phlebogram in case 4. On the right side there is normal filling of the superficial and deep veins, whereas on the left there is an absence of filling of the deep veins. Because of blockage of the deep veins the superficial veins are abnormally prominent.

vice complaining of right lower quadrant pain. She was treated conservatively for pelvic inflammatory disease and discharged eleven days later with instructions to remain in bed at home. She returned four days later stating that two days after being home she had sudden severe sharp pain in the right chest and

difficulty in breathing. A physician was called who prescribed therapy without relief and advised hospitalization. The admission diagnosis was pneumonia because signs of consolidation were found at the right base and there was x-ray evidence of pneumonitis. In light of subsequent findings this is now interpreted as an infarction. She recovered completely except for fluoroscopic evidence of thickened pleura and impaired diaphrag-



Fig 6—Bilateral phlebograms in case 5. On the right side there is normal filling of both the deep and superficial veins, whereas on the left there is an absence of filling of the deep veins and also dilatation of the superficial veins, indicating a thrombus in the deep venous system.

matic function noted eight days later. She was discharged after nineteen days in the hospital. She returned five days later to the gynecology service stating that for the past few days she had pain in the left thigh. This is the first time any complaint of any difficulty in the lower extremities could be found. Examination revealed moderate edema of the left leg and thigh with tenderness over the femoral vein and in the calf. A diagnosis of phlebothrombosis was made because the patient was relatively afebrile. Phlebograms were made which show normal filling of the right femoral, absence of the left femoral and presence of superficial left thigh veins (fig 5). Because of the

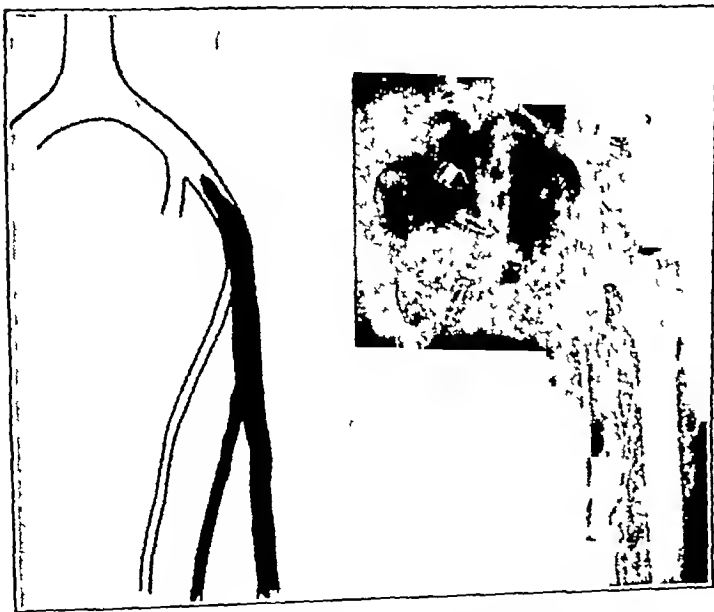


Fig 7—Phlebogram in case 6 showing well filled long saphenous vein and dilatation of other superficial veins, but absence of filling of the femoral, indicating the presence of a thrombus in the deep venous system.

previous infarction, the femoral vein was explored and found to contain a typical "red thrombus".

This case illustrates how in many cases repeated nonfatal embolisms can occur. Fortunately, in spite of the delay in recognizing the true condition, the infarctions were relatively small and the involved vein

was finally ligated before an embolism large enough to cause death broke loose.

CASE 5—Mrs A L, aged 22, white, was admitted to the obstetric service near term with preeclamptic toxemia. She delivered two weeks after admission and was then transferred to the medical service for study because of a pronounced anemia. While there she developed a typical thrombophlebitis of the right lower extremity for which procaine sympathetic lumbar block was done on several occasions. Six days later, because of progression of her symptoms, consisting of increasing pyrexia and swelling, phlebograms were done which showed obliteration of the right femoral vein but a normal left femoral vein (fig 6). Because of considerable pelvic tenderness it was thought by the gynecologists that she had a pelvic thrombophlebitis, which was proved at operation. The inferior vena caval and the ovarian veins were ligated. The temperature returned to normal within ten days.

CASE 6—Mrs L H, aged 23, white, was admitted to the gynecologic service complaining of flooding. A diagnosis of cervical erosion, hyperplastic endometrium and relaxed perineum was made and a dilation and curettage, conization of the cervix and posterior colporrhaphy were done. Postoperatively on the eighth day she developed fever, which was thought to be due to parametritis. On the twelfth postoperative day she

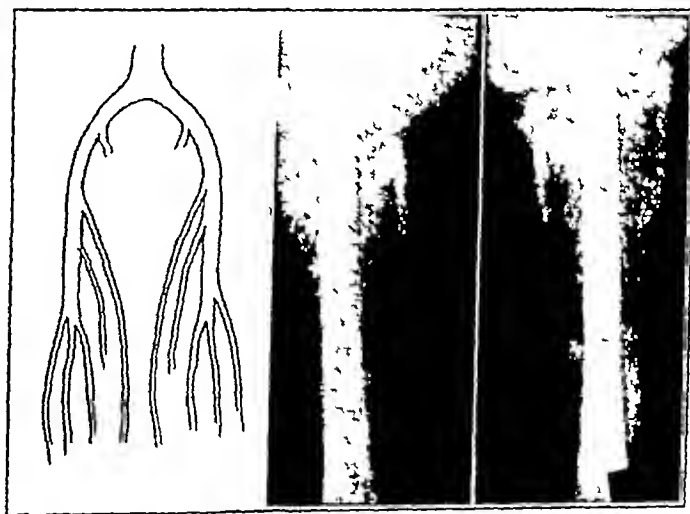


Fig 8—Bilateral phlebograms in case 7 showing normal filling of both superficial and deep veins. Although clinically intravenous clotting was suspected, the normal filling of the veins as demonstrated by phlebography, ruled out the presence of an intravenous clot. Patient's symptoms were subsequently found to be due to a cul-de-sac abscess.

complained of pain in the left thigh. It was noted that there was mild edema of the thigh and leg and tenderness along the course of the femoral vein. Phlebographic studies showed a complete femoriliac obliteration (fig 7). Repeated lumbar sympathetic procaine blocks relieved the clinical manifestations of thrombophlebitis.

In cases of thrombophlebitis, ligation is unnecessary because here the clot is intimately attached to the vein wall and embolic phenomena rarely if ever occur.

CASE 7—Mrs L H, aged 43, white, on her second postoperative day following a hysterectomy developed fever to 104 F, the pulse rate was 110. This persisted until the fifth day, when slight edema of the legs was noted. Pelvic or iliofemoral thrombophlebitis was suspected, and phlebograms were made. The deep veins were found to be normal (fig 8). Subsequently an abscess was detected in the cul-de-sac and drained resulting in relief of symptoms.

Thus it is demonstrated that often negative phlebograms are of considerable aid.

CASE 8—Mrs M McI, aged 55, white developed left thrombophlebitis following an injury resulting in evisceration and laceration of the colon. Phlebography demonstrated obliteration of the deep veins and dilatation of many superficial veins (fig 9).

Although phlebography demonstrated very clearly in this case the extent of the thrombophlebitic process, we believe that this procedure is generally not necessary in thrombophlebitis in contradistinction to phlebotrombosis, in which accurate localization of the clot is essential in order that adequate therapy may be instituted

CASE 9—S G, a Negro woman aged 43, had an extensive carcinoma of the cervix. She had a definite internal saphenous thrombophlebitis and was suspected of having deep venous thrombosis. Phlebography, however, demonstrated a patent femoral vein (fig 10)

In superficial thrombosis the diagnosis is usually obvious because the vein is readily palpable and often visible. There is inflammatory reaction and tenderness along its course. Whereas embolism seldom follows thrombophlebitis of the superficial veins, it can complicate phlebotrombosis of this system. Because



Fig 9—Phlebogram in case 8 showing complete absence of filling of the deep venous system with filling and dilatation of the superficial veins. In this case the intravenous clot was the result of thrombophlebitis and not phlebotrombosis.

of the innocuousness of and the ease with which ligation of the superficial veins can be done, it is indicated in all spontaneous intravenous clotting of the superficial veins of the thigh.

CASE 10—M J, a Negro woman aged 45 had a vaginal hysterectomy. The postoperative course was stormy because of a pelvic peritonitis and a thrombophlebitis in the right iliofemoral vein was suspected. Lumbar sympathetic nerve blocks were done and apparently the thrombophlebitis cleared up. The pelvic infection improved and she was discharged. She returned with swelling of the leg and tenderness of the calf on the right side. Bilateral phlebography showed normal veins on the left and occlusion of the deep veins of the right leg with apparently a long clot extending into the popliteal and femoral veins (fig 11). Another phlebogram taken an hour later showed the same defect (fig 12). Because the filling defect in the popliteal and femoral veins was incomplete it was thought that the thrombus was lying loose in the vessel and therefore was even more likely to become detached than those in most cases of phlebotrombosis. Operation was considered even more urgent

in this case than usual. At operation a long 'red thrombus' was sucked from the vein and ligation was done at the site of election.

This patient had not suffered embolic disturbances but one can readily see what might have happened if the vein had not been ligated.



Fig 10—Phlebogram in case 9. Although a deep vein thrombosis was suspected phlebography showed satisfactory filling of the deep veins but an absence of filling of the superficial veins indicating a thrombus in the long saphenous.

CASE 11—C J K., aged 60, was seen at his home on Jan 15, 1942 with the story that approximately five weeks previously he had developed pneumonia. He was treated by the usual

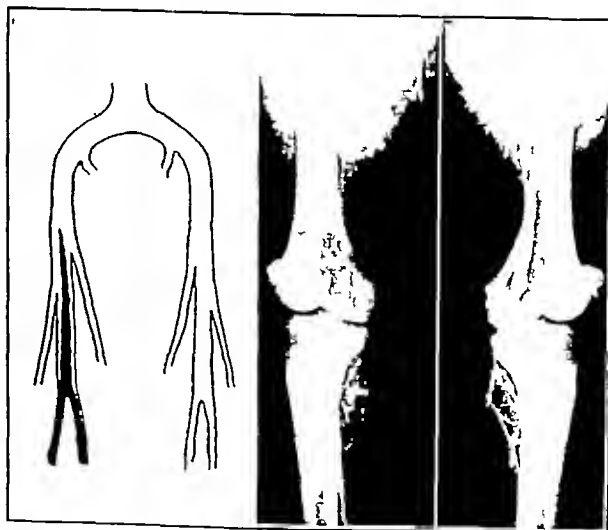


Fig 11—Bilateral phlebogram in case 10. On the left there is normal filling of both the deep and superficial veins whereas on the right there is filling of the deep veins of the thigh and the superficial veins of the leg but a defect of the deep veins of the leg and popliteal vein. The defect produced by the clot extending up into the saphenous can be well visualized.

methods and recovery was quite satisfactory except that he continued to have a rapid pulse subsequently. He developed another attack of pneumonia on the opposite side. This was associated with hemoptysis. Not until two more attacks had

occurred was it evident that the pulmonary lesion was infarction. Heparin was administered and blood coagulation varied between fifteen minutes and one hour. During the period of heparinization, which lasted approximately ten days, two more emboli broke off. At the time he was extremely ill, semicon-

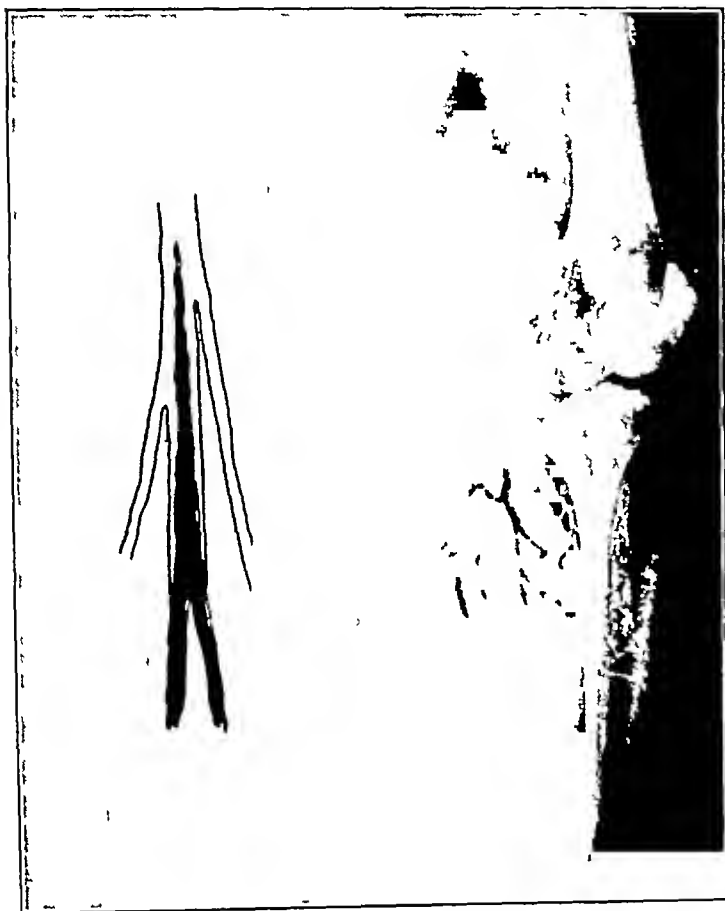


Fig 12—Phlebogram of the right leg in case 10, demonstrating normal filling of the superficial veins with dilatation of these veins of the calf, but absence of filling of the deep veins of the leg and popliteal area with the defect extending up into the femoral

scious and cyanotic in spite of the fact that he was in an oxygen tent. Careful examination failed to reveal any evidence of thrombosis. The patient was removed to the hospital. Bilateral

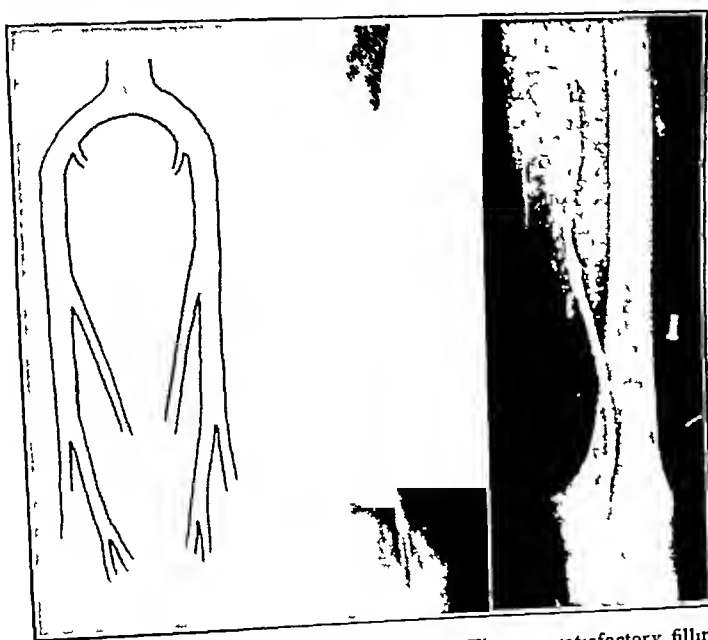


Fig 13—Bilateral phlebograms in case 11. There is satisfactory filling of the deep and superficial veins of the popliteal area and the thigh demonstrating an absence of clot in these areas

phlebography was done by inserting a cannula into a dorsal vein on the dorsum of each foot, 12.5 cc. of diodrast was injected into each foot simultaneously and an x-ray exposure was made of the two legs. Shortly after this plates were placed under

the thigh and another 12.5 cc. of diodrast was injected into the foot, x-ray exposures of the thigh being made. Examination of the phlebograms showed filling of all the veins except the short saphenous on the left (figs 13 and 14). The patient was taken to the operating room immediately and the upper end of the short saphenous vein was exposed. It was found to be collapsed and dissection down for a short distance disclosed that it was completely empty. Because of the poor condition of the patient it was decided not to extend the incision down until the thrombus was reached, but instead the vein was tied off. The extremities were wrapped with compression bandages from the toes to the groin, and active mobilization was started. Because of extensive pneumonitis he was given sulfonamides, which gradually brought down his temperature. His progress was uneventful from there on.

#### CONCLUSIONS

- 1 Phlebography is imperative in all cases of intravenous thrombosis in which the clot is not firmly attached to the vein wall, i. e., in phlebothrombosis.
- 2 The procedure is simple, safe and informative.
- 3 Whenever in phlebothrombosis a defect in the venous system is demonstrated immediate operation

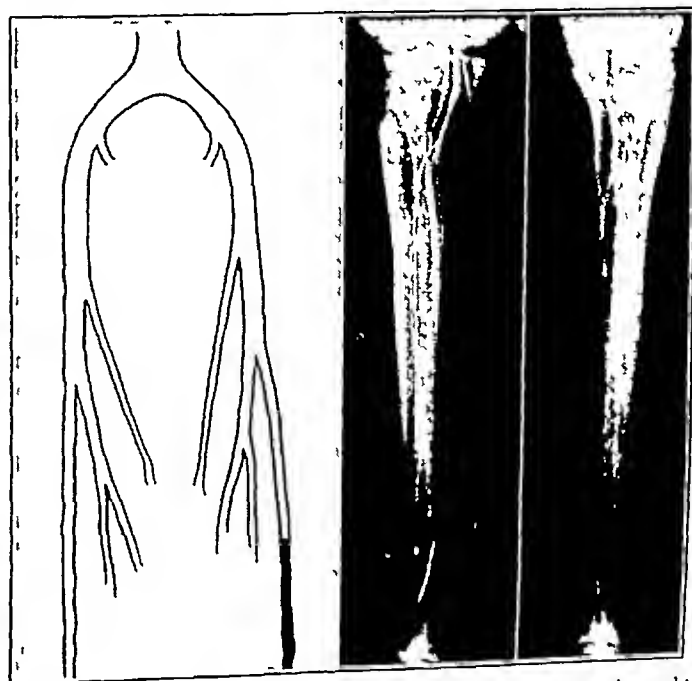


Fig 14—Bilateral phlebograms of the leg in case 11. On the right side there is normal filling of the superficial and deep veins. On the left, however, there is an absence of filling of the short saphenous in its lower portion, indicating a thrombus in this area which was demonstrated at operation.

is imperative. This should consist of either ligation of the involved vein above the site of the thrombus or thrombectomy.

- 4 Only by the prompt recognition of intravenous thrombosis in phlebothrombosis and the institution of measures to prevent the detachment of the clot can the mortality rate from pulmonary embolism be decreased.

**Iron Used as Medicine**—Iron has been used as a medicine since ancient times. Dioskorides gave iron rust to women who were flooding. Water or wine in which a glowing piece of iron had been quenched was long used as a treatment for diarrheas and dysenteries. As one would expect, iron was used often for exorcising disease. A curious idea was that of the Romans, who drove nails into the walls of the temple of Jupiter in order to ward off epidemics. Perhaps with somewhat similar ideas the Germans in the last war drove nails into a wooden bust of Bismarck.—Alvarez, Walter C., in *Essays in Biology*, Berkeley, University of California Press, 1943.



LESIONS OF THE ESOPHAGUS IN  
GENERALIZED PROGRESSIVE  
SCLERODERMAJOHN R. LINDSAY, MD  
FREDERIC E. TEMPLETON, MD  
AND  
STEPHEN ROTHMAN, MD  
CHICAGO

Generalized or diffuse scleroderma is a disease well studied from the clinical and the microscopic point of view and certainly is a well defined clinical entity. It is not restricted to the skin and to the organs adjacent to the skin but is a generalized systemic disease of the connective tissue.

In most cases the process starts on the hands and feet with a somewhat later and slower involvement of the face.

Three stages can be distinguished clinically: the edematous, the indurative and the atrophic stage. The initial edema does not pit on pressure. The skin appears tense and cannot be folded. The face assumes a mask-like expression, the regular folds smooth out. In the second phase the skin hardens and stiffens. This is particularly pronounced on the fingers, on the dorsa of the hands and in the region of the ankles. Hyperpigmented and depigmented spots appear in this stage. In the third stage the tips of the fingers become smaller and pointed, and the fingers are immobilized in a flexed position. The face, the nose, the ears, and the lips become gradually smaller and thinner. Ectropion develops in consequence of the atrophy of the lids. All mucous membranes of the mouth (tongue, hard and soft palate and gums) may be involved in the indurative and atrophic process. Ulcers, probably due to tension and deficient circulation, develop mainly on the finger tips, the elbows and the ankles. Fibrosis of the lungs without any subjective symptoms is a common sign of the disease.

With regard to the initial signs, two types of the disease can be distinguished: the type starting with Raynaud-like signs and symptoms and the arthritic type, the latter starting with joint pains and stiffness because of primary scleroderma in the articulations. There are condensation and absorption of bone material and atrophy at the joint surfaces with rarefaction of the substantia spongiosa. However, these two types are often intermingled. In the arthritic type one may see acroasphyxia of the fingers at any time, and in the Raynaud type severe arthritis may develop. Calcium deposits in soft tissues are often recorded, and true calcinosis in combination with scleroderma was described as a special syndrome by Thibierge and Weissenbach.

Pathologically, the main feature of the disease is a peculiar change of the collagenous tissue usually designated as homogenization. After the edematous stage, with the picture of swollen and loose fibers, has subsided, the collagenous fibrillae become thickened and less acidophilic than normal or even basophilic, which means that the collagen assumes acid properties. In this dense fibrous connective tissue the fibroblasts are shrunken and less numerous than normal. The vessels are intensely involved by the fibrotic proc-

ess. The muscularis is completely replaced by connective tissue consisting of gross fibers. Also the elastica may disappear completely.

LESIONS OF THE ESOPHAGUS IN GENERALIZED  
SCLERODERMA

Up to the present time little attention has been paid to the disturbance of esophageal function in diffuse scleroderma, although it seems to be present in many cases and may be an early sign.

Difficulty in swallowing has been reported in 16 cases of diffuse scleroderma. A postmortem examination of the esophagus has been made in 3 cases, while an esophagoscopy examination made during life has been reported in only 1. No microscopic examination made during life has been reported.

In 1932 Fessler and Pohl<sup>1</sup> reported esophagoscopy findings in a single case. The mucosa down to a stricture at a depth of 32 cm was normal. The stricture appeared to be dense scar tissue narrowing the lumen so that a thin probe could not be passed. Although the mucosa in the stenosed part bled slightly, no gross ulceration or tumor was seen, and the firmness of the scar ruled out the possibility of spasm.

Ken Kure and his associates<sup>2</sup> described the microscopic changes in the esophagus of a patient examined post mortem as "dystrophic."

In 1931 Rake<sup>3</sup> described gross and microscopic postmortem findings in a case of scleroderma in which the roentgenologist had described contraction in the lower end of the esophagus six years earlier. Grossly the esophagus was dilated to 4.5 to 5 cm in width. The muscular coats were not visibly hypertrophied, but the mucosa was absent over the lower three fifths of the organ. The author did not state whether or not the patient had free acid in the stomach, so it is not known whether or not the loss of mucosa was the result of postmortem degeneration, peptic esophagitis or scleroderma. In the upper third erosions were present in an intact mucosa, but in the middle and lower thirds the mucosa was lacking. The submucosa was thickened and infiltrated with cells which were chiefly mononuclear with a few polymorphonuclear leukocytes; the changes were more extensive in the lower two thirds. Auerbach's intermuscular plexus was intact, and the ganglions and muscles appeared normal. A diagnosis of chronic ulcerative esophagitis was made.

Roentgenologic examinations of the esophagus have been made in 13 of the 16 reported cases. The descriptions have been somewhat sketchy. However, those given by Fessler and Pohl, Ken Kure and Weissenbach and his co-workers<sup>4</sup> have been fairly detailed. All of these authors described diffuse dilatation of the esophagus with the passage of the bolus slowed, especially when the patient was in the horizontal position. Hoesli<sup>5</sup> presented a case in which the retardation of the bolus was noticed only at the cardia. Weissenbach and Fessler and Pohl<sup>1</sup> reported regional stenosis in the lower end of the esophagus. Fessler and Pohl also reviewed the

1 Fessler A. and Pohl R. Stenotic Process of the Esophagus in Scleroderma, *Dermat. Ztschr.* 63: 164-169, 1932.

2 Kure Ken, Yamagata K., Tsukada S. and Hiyoshi J. Pathogenesis of the Esophagus in Scleroderma and Dystrophic musculorum progressiva. *Klin. Wchnschr.* 15: 516, 1936.

3 Rake Geoffrey. On the Pathology and Pathogenesis of Scleroderma. *Bull. Johns Hopkins Hosp.* 48: 212, 1931.

4 Weissenbach Henry and others. Progressive Scleroderma. Syndrome of Thibierge-Weissenbach. Ulcer of the Leg and Calcification of Soft Tissues. Esophageal Trouble. *Bull. Soc. franc. de dermat. et syph.* 44: 2018-2037, 1937. Weissenbach Stewart, and Hoesli Henry. Functional Disturbances of the Esophagus and Esophageal Lesions in Scleroderma. *Ibid.* 44: 1060-1063, 1937.

5 Hoesli Henry. Functional Disturbances and Lesions of the Esophagus in Scleroderma. Thesis Paris Jouve & Cie 1937.

literature and found that the lesions in the esophagus had been termed cardiospasm (Nomland), esophagitis (Schwarz), diverticulum (Erhmann) and atony (Schmidt)

All of the 5 cases which form the basis of this report were clinically and histologically typical cases of diffuse

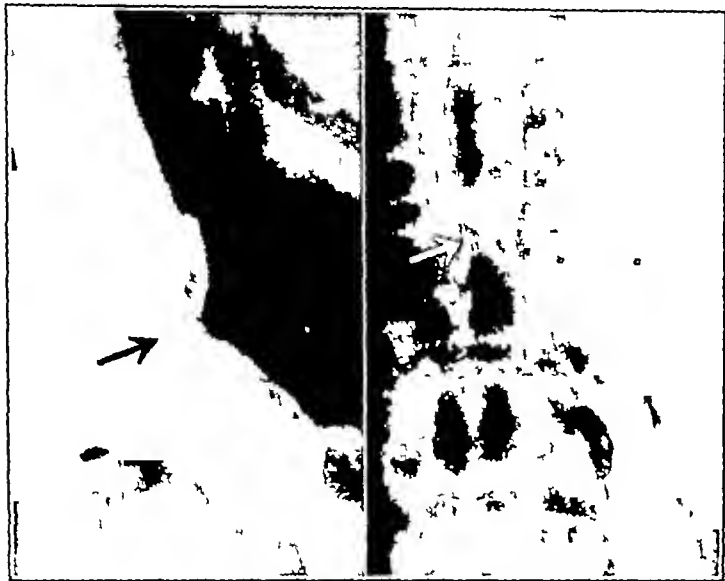


Fig. 1 (case 1)—On the left barium sulfate fills the lower end of the esophagus, showing the stenosis (arrow) at the upper border of the phrenic ampulla. On the right, air is seen in the esophagus after most of the barium sulfate has passed through.

scleroderma.<sup>6</sup> The patients were 3 men and 2 women. They presented clinical evidence of a disturbance of the swallowing mechanism, varying apparently only in the stage of the esophageal lesion. There was roentgenologic evidence of disturbed function of the esophagus in all 5 with a varying degree of stenosis in 3. Four of the patients were examined on one or more occasions by means of the esophagoscope, and biopsy was performed in 2 cases.

#### CASE HISTORIES AND SYMPTOMATOLOGY

Considerable variation in the severity and the time of onset of esophageal symptoms seems to be characteristic.

Only 1 of the 5 patients volunteered any complaints referable to swallowing. In the other 4 the symptoms were clearly brought out on questioning, but the comparative severity of the pain and discomfort from the cutaneous lesions caused the difficulty in swallowing to be overlooked.

In the first patient (S. S.), an unemployed man aged 40, the difficulty in swallowing preceded the complaints referable to the skin by one and a half years. The obstruction was apparently steadily progressive for seven years. Dilation had been done five years previously and repeated at irregular intervals. He had not complained of epigastric pain at any time. When first seen he was receiving feedings through a gastrostomy opening, with a string in the esophagus for retrograde dilation. At admission he displayed fully developed, easily recognizable generalized scleroderma with the characteristically stiff and atrophic appearance of the face and the hands. He gave a typical history of initial Raynaud-like signs and symptoms occurring five and a half years ago.

The second patient (J. F.), a man 48 years old, had suffered from generalized scleroderma for three years. He was under

the observation of the dermatology clinic of the University of Chicago for two and a half years. During this period he had an "arthritic" syndrome with typical sclerodermatic bone changes, Raynaud-like signs and symptoms, and severe ulceration on the finger tips, the elbows and the ankles. Thoracic sympathectomy was performed, but the operation had no beneficial effect whatever. His cutaneous disorder was clinically and histologically typical for scleroderma. On being questioned he admitted that he had had difficulty in swallowing. Solid food in particular seemed to stick and cause a fullness in the lower sternal region. The lower part of the esophagus was already stenosed to a diameter of about 6 mm.

The third patient (N. S.), a milkman aged 46, had noted numbness of fingers and hands to cold for about eighteen months. On admission he did not have typical scleroderma, but the shape and the pigmentary anomalies of the fingers and some spotted shiny areas on the upper part of the chest aroused suspicion. Neither solid edema nor atrophy was seen. However, in the course of one month's hospitalization there was progressive stiffening of the fingers, the dorsa of the hands and the chest. At a few spots definite signs of atrophy were seen. Microscopic examination of the skin revealed characteristic histologic changes. The patient also gave a history of pain beneath the sternum and in the epigastrium beginning eighteen months earlier. Pain came on about an hour after taking food, especially after consuming beer, "soda pop" and "hot dogs." It gradually became more frequent, lasted longer and was worse on lying down, also on vomiting and bowel movements. A preparation containing chiefly magnesium carbonate and sodium bicarbonate or one designated as citrocarbonate gave relief.

The difficulty with cold hands was noticed about six months after the digestive complaints. Although the burning pain was always located behind the sternum from the epigastrium to the neck, it had been interpreted as due to gastric ulcer, until a review of the history and x-ray examination of the esophagus as well as an esophagoscopy were made. At this time an early degree of stenosis at the lower end of the esophagus was present.

The 2 women presented a less advanced symptom complex referable to the esophagus. The first of these (M. G., aged 54) had had scleroderma for fifteen years and had been observed in the dermatology outpatient department for thirteen years; she had experienced difficulty in swallowing for over two years. Water was the worst offender and had to be swallowed slowly. A spasm of



Fig. 2 (case 2)—Patient in horizontal position. The esophagus remains dilated throughout. A moderate degree of stenosis (arrow) was present at the upper border of the ampulla.

coughing frequently followed, and there was a sensation of fullness for a few moments behind the sternum, more noticeable and prolonged on lying down. The patient had found that she had great difficulty in swallowing water while lying down.

The second (F. N., aged 54), with scleroderma for six and a half years, which on admission extended over the whole body and face, gave a history of dysphagia on careful question-

<sup>6</sup> The term *acrosclerosis* has not been used in this paper although all of our 5 cases fit the description of *acrosclerosis* given by J. Sella (Die *Akrosklerosis* [Sklerodaktylie] und deren Symptomenkomplex nebst neueren Untersuchungen bei Sklerodermie, *Arch. f. Dermat. u. Syph.* 163: 343-365, 1931) and that by P. A. O'Leary and M. Waisman (Acrosclerosis, *Arch. Dermat. & Syph.* 47: 382-397 (March) 1943). We felt that what has been designated as *acrosclerosis* is identical with what always has been called *diffuse* or *generalized* scleroderma with *sclerodactylia*.

ing For over two years she had noticed "heartburn", a dull pain behind the sternum extending up to the neck an hour or so after eating occasionally was present in daytime but was more annoying at night On drinking a glass of water she had to stop and wait a few moments for it to go down A sensation of a load on her chest followed the drinking of a few mouthfuls which she compared to the weight of "holding a baby in her



Fig 3 (case 3)—Two views of barium sulfate in the lower end of the esophagus showing moderate stenosis (arrows) at the upper border of the ampulla

arms and which required a few moments to pass off On testing her ability to drink a glass of water while in the reclining position she had much difficulty in getting down more than a few sips She had noticed that lying on her left side would bring on the burning pain beneath the sternum?

#### RESULTS OF FLUOROSCOPY

On fluoroscopy each of the 3 men was found to have a localized narrowing of the esophagus about 4 or 5 cm above the level of the diaphragm (figs 1, 2 and 3) The narrowing was abrupt, measuring 2 or 3 cm in length and varying in width Some variation in width occurred with distention of the esophagus and with pulsation of the heart

In all 5 patients there were pronounced changes in the muscular movements<sup>8</sup> With the patient standing, barium sulfate passed from the pharynx to the stomach with some delay at the site of stricture but not at the cardia When the patient was placed in the horizontal position the barium sulfate entered the esophagus and

there remained As each successive bolus was taken, the esophagus distended to receive it, reaching a width of approximately 4 to 5 cm The primary peristaltic wave which normally arises in the pharynx and travels the length of the esophagus with each act of deglutition traveled only down to about the level of the suprasternal notch In the 3 men and 1 woman the waves ceased entirely, but in the second woman (M G) it continued on down the esophagus as a wave insufficient in depth to propel the bolus along In its progression this shallow wave differed from the normal wave in that the esophagus behind the advancing peristaltic constriction did not remain contracted but distended immediately The shallowness of the wave and the immediate distention of the esophagus behind the advancing wave allowed barium sulfate in the esophagus ahead of the wave to regurgitate through the peristaltic constriction into the esophagus above as the peristaltic wave progressed toward the stomach

The failure of the esophagus below the level of the suprasternal notch to contract efficiently undoubtedly explains the retention of barium sulfate in the esophagus as long as the patient remained in a horizontal position Air which was also taken with the act of deglutition remained in the esophagus If at this stage of the examination the patient was raised to a sitting or a standing position, the bulk of the barium sulfate passed into the stomach, but the esophagus did not collapse completely, the walls being separated by air within the lumen (fig 1) It seemed obvious that the emptying of the esophagus was caused by gravity rather than by contraction of the walls and that in the case of the strictures the rapidity of the emptying was slowed only because of the resistance offered by the strictures

While a woman (F N) was in the horizontal position, a small amount of barium sulfate was seen passing into the stomach during each expiration, but during inspiration the cardiac sphincter appeared firmly closed During the Valsalva experiment in this patient, instead of the cardiac sphincter pinching off the esophagus and the phrenic ampulla ballooning out as in the normal person, the cardiac sphincter opened permitting passage of barium sulfate as a result of the increased intrathoracic pressure (fig 4) The narrowing seen at the upper level of the ampulla in this illustration was not constant and therefore was not interpreted as an early degree of stenosis

If these patients were allowed to remain in the horizontal position after the esophagus filled and additional



Fig 4 (case 5)—This view was taken during the Valsalva maneuver Barium sulfate is seen passing from the ampulla through the cardiac sphincter An apparent narrowing is seen at the upper border of the ampulla but no stenosis was demonstrated

7 A sixth patient with generalized scleroderma (a patient of Drs. Oppenheim and Cohen Chicago) did not volunteer complaints referable to the esophagus He had difficulty in swallowing in that fluids sometimes escaped up into the nasopharynx and the nose apparently because of stiffness of the soft palate Fluoroscopic and x-ray examination revealed complete absence of primary secondary and nearly all tertiary peristaltic waves of the esophagus Esophagoscopy showed no exudate or ulceration of the esophageal lining This apparently represents an early stage of the disease affecting the esophagus

8 Physiologists describe three types of muscular activity in the esophagus namely the primary secondary and tertiary waves The primary wave is initiated by the act of deglutition and begins in the pharynx As it progresses down the esophagus a wave of inhibition precedes the wave of contraction so that the esophagus distends as the bolus is forced along As the wave of contraction passes the esophagus behind remains contracted If the patient takes a deep breath, holds it and bears down as if to move his bowels after swallowing a bolus of a barium sulfate mixture the closure of the cardia probably produced by the pinchock action of the diaphragm offers resistance to the passage of the bolus The 3 or 4 centimeters of the esophagus above the diaphragm become considerably distended The primary peristaltic wave progresses down to the distended portion and there ceases If the patient continues to hold his breath barium sulfate will regurgitate up the esophagus through a narrowing when the esophagus above relaxes This narrowing is seen only during the phase of regurgitation and not during the forward movement of the bolus

Secondary waves are similar to primary waves except that they originate in the middle of the esophagus usually at the level of the aortic arch. Tertiary contractions are not clearly understood and are sometimes called curling They appear as irregular contractions of the lower half of the esophagus and last for not more than a second or two At the height of the contraction the esophagus has a beaded appearance

barium sulfate was given, barium sulfate entered the stomach. In all 5 it appeared that the barium sulfate was forced into the stomach by pressures set up by the abbreviated primary peristaltic wave and transmitted through the column of barium sulfate. The amount of barium sulfate that entered the stomach with each act of deglutition seemed to be equivalent to the amount taken with each swallow. There was no increase in distention of the esophagus or in regurgitation of the esophageal contents into the pharynx during this stage of the examination. The cricopharyngeus muscle was not incontinent.

The length of time that the upper part of the esophagus remained in contraction after the passage of the

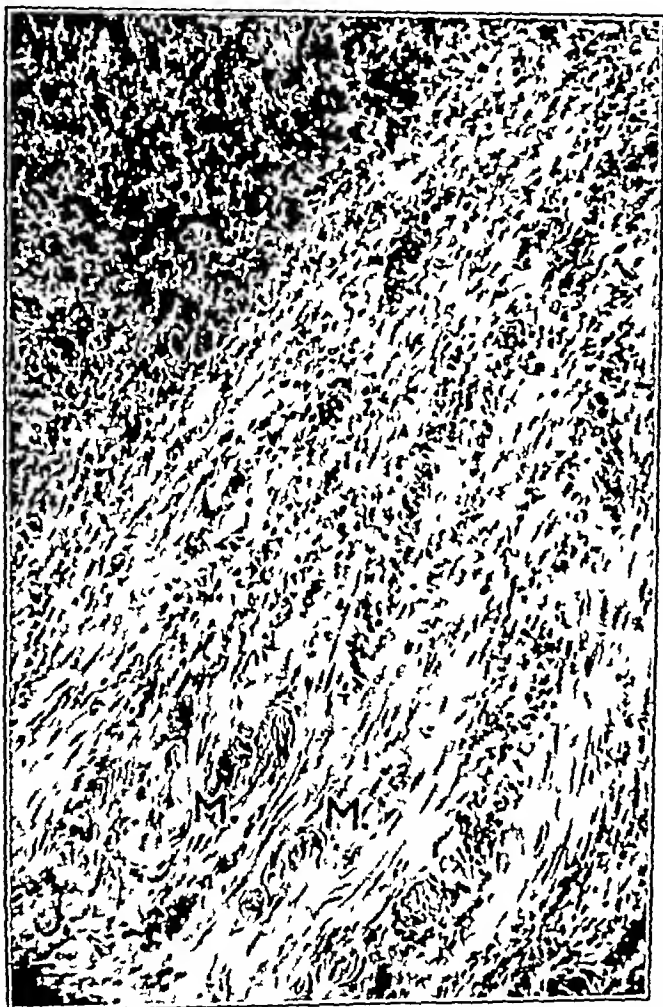


Fig 5 (case 2)—Section of a biopsy specimen from the esophagus, cellular infiltrate extends from the densely infiltrated mucosal layer down into the muscularis mucosae (M M). Reduced from a photomicrograph with a magnification of 225 diameters.

primary peristaltic wave was brief, perhaps not more than one or two seconds. If the patient was in a horizontal or a Trendelenburg position, barium sulfate from the lower part of the esophagus flowed into and distended the upper portion of the esophagus as it relaxed (fig 2). In the normal person this phenomenon will not occur unless one act of deglutition is immediately followed by a second act. In all 5 cases of scleroderma the relaxation of the upper portion of the esophagus occurred in the absence of the second act of deglutition. Occasional small secondary peristaltic waves were observed in only one of the patients (F N). These quickly disappeared and were ineffective. Shallower tertiary waves were observed in only one patient in whom stricture was not present.

#### RESULTS OF ESOPHAGOSCOPY

Esophagoscopies were done on 4 of the 5 patients, including those with evidence of stenosis. Three separate examinations were made in the patient with the greatest degree of stenosis, once for diagnosis, once for removal of a foreign body and once for secondary examination preliminary to anastomosis of the stomach to the esophagus above the stricture.

Two examinations were made with removal of specimens for biopsy in the second case, one esophagoscopy and biopsy in the third, and one esophagoscopy in the fourth.

In 3 of the 5 cases difficulty was experienced in introducing the esophagoscope under local anesthesia. It appeared to be due in part to the patient's inability to open the mouth more than about one-half the normal width, inability to extend the tongue beyond the mucous membrane margin of the lower lip and tightness of the skin over the jaws and neck. In addition none of the patients seemed able to produce relaxation of the cricopharyngeus sphincter by swallowing. Under general anesthesia, however, the sphincter relaxed easily and the walls in that region appeared grossly normal. Some form of general anesthesia appears definitely indicated for esophagoscopy in cases of this type.

In all cases the wall of the esophagus from the beginning of the middle third downward was diffusely reddened and apparently thickened, with lessened tendency to form normal folds. In the lower third a diffuse layer of white exudate was present, which could be easily separated off, leaving a granulating base. In the patient with the most advanced changes (S S), at a distance of 40 cm from the upper teeth a smooth scar tissue constriction was present which did not admit the esophagoscope. There was superficial ulceration in and above the area of the stricture which became apparent when the layer of exudate was removed. A string was present in the esophagus for retrograde dilation, but the lumen of the stricture was too small to permit a view below it.

In the other 2 men a lesser degree of fibrous tissue constriction was present in the lower part of the lower third, about 4 or 5 cm from the stomach. The mucosa below the stenosed area was inspected in each of these patients and showed no exudate or evidence of ulceration. The color in that region, however, was not the pale color of a normal esophagus but was darker, approximating that of gastric mucosa. In the constricted area and upward for several centimeters a diffuse white membrane could be separated off, leaving a superficially ulcerated base.

The ulcerated area varied somewhat in extent in the 4 cases examined. A portion of this membrane was first removed for examination in the second case, but when it was found to contain no tissue a second esophagoscopy with biopsy was done. One biopsy specimen was taken in the third case.

One woman (F N) was examined esophagoscopically. Her esophagus also showed an inflammatory reaction beginning in the lower part of the upper third and extending downward. In the lower third a thin white diffuse membrane appeared, becoming progressively thicker down to about 4 or 5 cm from the lower end, where the inflammatory reaction disappeared and the lining appeared normal although darker in color as in the other cases. The membrane peeled off easily, leaving a bright red granulating base. No definite constriction was observed.

## MICROSCOPIC EXAMINATION

The specimen for the first biopsy (J F) proved to be a fibrinous membrane without any mucosa. This membrane was thick, containing much fibrin in which many polymorphonuclear leukocytes were trapped as well as a considerable number of eosinophils. The second specimen came from the same region, just above the stenosis. It consisted of the surface layers down through the muscularis mucosae but did not include enough of the connective tissue of the submucosa for examination. The epithelium was entirely absent. The mucosa was definitely thickened, with many newly formed capillaries containing large hyperplastic endothelial cells, and was infiltrated with polymorphonuclears, eosinophils and other inflammatory cells. The infiltrate invaded the muscularis mucosae (fig 4).

The third biopsy (N S) was done on tissue from just above the stenosed area in the lower third of the esophagus. The section included submucosal connective tissue and blood vessels, muscularis mucosae and granulation tissue lining the esophagus. The epithelium was completely absent. The granulation tissue formed a layer about twice as thick as the normal mucosa (fig 5). It contained many capillaries with hyperplastic walls, but these were less numerous and farther apart than in the former case.

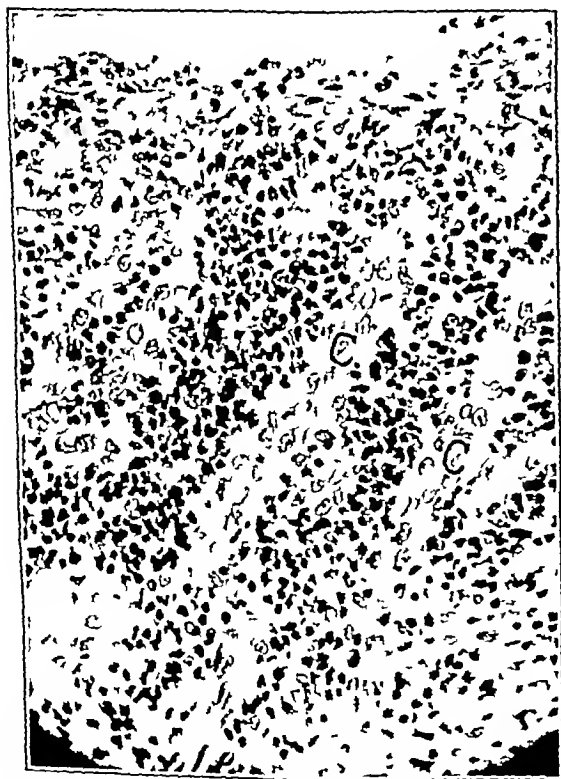


Fig. 6 (case 3)—Section of a biopsy specimen from the esophagus. Note the surface layer of granulation tissue with hyperplastic capillary walls (C C) and absence of epithelium. Reduced from a photomicrograph with a magnification of 450 diameters.

Plasma cells were especially numerous, but there were also numbers of eosinophils and neutrophils.

The top layer of granulation tissue was a clean surface in the section. The muscularis mucosae had a few inflammatory cells, but such cells were more numerous around blood vessels of the submucosa.

In the fragment of connective tissue excised the connective tissue was dense with sparse cells of the old fibrocytic type, rather small and shrunken (fig 6). This abnormal connective tissue was less eosinophilic than other dense connective tissue such as tendon. The walls of a group of small blood vessels deep in

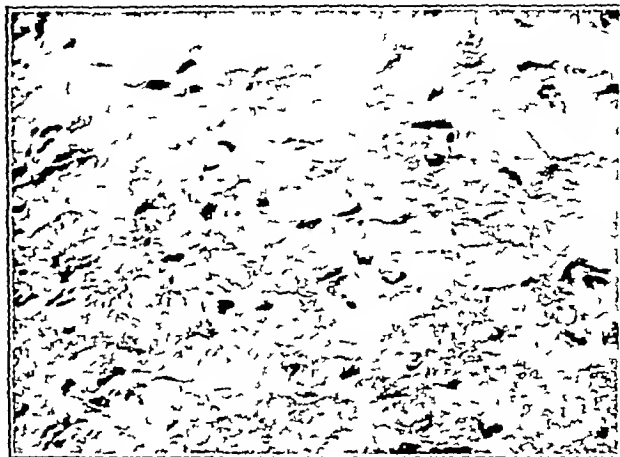


Fig. 7 (case 3)—Section of submucosal connective tissue. The connective tissue is dense with sparse cells of the old fibrocytic type, rather small and shrunken. Reduced from a photomicrograph with a magnification of 650 diameters.

the submucosa had an increase of connective tissue. The inflammation as a whole in this section showed an older, more organized ulceration than that seen in the former case.

No epithelium was shown in either of the sections. The thickening of the mucosa in both specimens was more pronounced than in common types of inflammation and had a more stenosing character.

## COMMENT

The impression gained from these 5 cases is that esophageal disturbance is a characteristic manifestation of generalized scleroderma and that it is likely to appear early in the course of the disease. In the early stages, however, the symptoms are likely to be attributed to a gastric disturbance or may be of such a mild nature as to receive little attention or to be subordinated to the more severe symptoms from the skin and joints until actual obstruction to swallowing is present.

The early esophageal symptoms— inability to swallow more than a few mouthfuls of fluid rapidly, difficulty in swallowing while lying down and the sensation of fulness behind the sternum or of a weight on the chest for a few moments after swallowing—are explained by the fluoroscopic observation that normal peristalsis is absent in the lower two thirds of the esophagus and that the contents accumulate in this relaxed and dilated portion. Propulsion of the bolus occurs mainly by gravity or by the transmitted effect of peristalsis in the upper end on repeated swallowing and to a lesser extent to the expiratory phase of respiration, when intrathoracic pressure is higher.

The burning sensation or pain in the chest from the epigastrium to the neck occurring an hour or so after taking food, worse on lying down during the night and on lying on the left side suggests the probability of regurgitation of gastric contents into the esophagus with resulting irritation and inflammation. This view is favored by the fluoroscopic evidence in 1 case (F N) that the cardiac sphincter as well as the



esophageal musculature above, was affected by some degree of weakness

For the explanation of the diffuse chronic esophagitis extending above the level of the aortic arch, which was a constant finding on esophagoscopy, two possibilities must be considered. An inflammatory change in the mucosa comparable to that seen in the skin might occur on the basis of scleroderma directly. Or the chronic esophageal inflammation may indicate a peptic esophagitis secondary to regurgitation and retention of gastric contents. The absence of a similar inflammatory reaction in the mouth, the pharynx and the upper limit of the esophagus although the tongue and the palate are affected by the disease, and the limitation of the mucosal changes to that part of the esophagus in which peristalsis is absent and mild dilatation is present would seem to favor the explanation of the diffuse chronic inflammation on the basis of retention and a peptic esophagitis. The primary disturbance of esophageal function leading to retention is, however, due to the sclerodermatic process.

The ulceration in the lower third of the esophagus down to the phrenic ampulla and the stenosis at the upper limit of the ampulla require explanation. Fluoroscopy indicated that the narrowing of the esophagus above the phrenic ampulla is constant, whereas the normal constriction in the phrenic ampulla moves along and is most prominent during the phase of regurgitation with the patient in deep inspiration. The narrowing present in scleroderma is seen during expiration as well as during inspiration.

With contraction of the esophagus the folds at the center of an organic constriction are usually obliterated or bundled together, whereas in the normal esophagus a distortion of the folds at the upper margin of the phrenic ampulla is not seen. Each of the strictures seen could be differentiated from cardiospasm since it lay well above the diaphragm. In cardiospasm the narrowing occurs in the interdiaphragmatic portion of the esophagus.

Fibrous tissue stenosis was observed by esophagoscopy in 3 cases, and the location of the narrowing was not at the junction of a herniated stomach and esophagus but at a higher level, as noted by x-ray examination. In another case the location at a higher level was confirmed at the operation for anastomosis of the stomach to the esophagus above the stenosis.

The unusual microscopic features of the granulation tissue layer, the pronounced thickening, the hyperplastic type of capillaries and the great number of eosinophils and plasma cells suggest chronicity but could scarcely be interpreted as indicating a specific etiologic factor.

The inflammatory process extends into the muscularis mucosae and is noted around some vessels in the submucosa. The connective tissue layer in the submucosa, however, presents features which are characteristic of sclerodermatic changes in the skin. Unfortunately the biopsy must be restricted to superficial layers, the deeper muscular layers with connective tissue and nerve plexus, which might be expected to show early changes, cannot be included.

A distinctive feature of the ulceration in these cases was its limitation to that portion of the lower third of the esophagus lying above the phrenic ampulla. The ulceration seemed limited to a few centimeters in

upward extent, but the esophagitis extended up into the upper third. No ulceration was seen below the stenosed area.

The explanation for the limitation of the ulceration and stenosis to the region above the ampulla as shown in illustrations remains obscure.

Benign ulcerations observed at autopsy, due to a terminal peptic esophagitis, have usually been reported in the lower end, not confined above the phrenic ampulla.

Benign discrete ulcers have been noted as having a predilection for the lower third of the esophagus<sup>9</sup> but not as occurring characteristically above the phrenic ampulla. No anatomic basis has as yet been demonstrated to explain the special behavior of this portion of the lower end of the esophagus.

While the superficial inflammatory changes and the loss of epithelium may be attributed to a peptic esophagitis, the primary disturbance of function of the esophagus is due to the sclerodermatic process, which in itself predisposes to ulceration. In this process the primary change must be sought in the "homogenization" of collagenous fibers, involving the connective tissue of vessels with a resulting tendency toward decrease of circulation and "trophic ulcers."

The tendency toward stricture in these cases appears to be explained as a direct result of the chronic ulceration. The limitation of the stricture to the area of greatest ulceration just above the ampulla and the tendency of chronic ulceration in the esophagus at any level to produce stenosis support this view.

#### SUMMARY

On the basis of the findings in 5 consecutive cases it appears that a disturbance of esophageal function is characteristic of generalized scleroderma. The esophageal disturbances are characterized by

1. Loss of peristalsis in the lower two thirds, with relaxation and mild dilatation of the lower two thirds down to the phrenic ampulla, and probably some atony of the cardiac sphincter. This occurs as a direct result of the sclerodermatic process.

2. Difficulty in swallowing solids or liquids, especially when in the lying position, due to delayed emptying of the esophagus.

3. Burning pain behind the sternum about an hour after meals, worse on lying down and particularly on lying to the left side, due probably to regurgitation of gastric contents into the esophagus and resulting chronic esophagitis.

4. Chronic ulceration in the lower third of the esophagus, localized chiefly to the region just above the phrenic ampulla. This is probably a direct result of the esophagitis, with sclerodermatic changes as a predisposing factor.

5. Stricture formation in the later stages, limited to the region immediately above the phrenic ampulla of the esophagus.

Biopsies revealed changes in the connective tissue of the submucosa which suggest sclerodermatic change.

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<sup>9</sup> Gray, Howard K., and Sharpe, Wendell S. Benign Lesions at the Lower End of the Esophagus. *Am J Surg* 54: 252-261, 1941. Vinson, P. P. Stricture of the Esophagus Occurring During Pregnancy. *Am J Obst & Gynec* 6: 346-348, 1923. Cicatricial Stricture of the Esophagus of Unknown Origin. *Surg, Gynec & Obst* 52: 955-957, 1931.

PSYCHIATRIC PROBLEMS IN  
THE ARMY

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Neuropsychiatric Consultant Fourth Service Command

MEDICAL CORPS, ARMY OF THE UNITED STATES

The problems of psychiatry in the Army have fundamental common denominators to the practice of all specialties in the Army: the lack of trained manpower, the immense importance of speedy action and the most effective disposition of patients. In psychiatry these problems have certain specific connotations due to the nature of the illnesses in this specialty. These problems should be of vital interest and concern to every citizen interested in the war effort and particularly to medical men. They should be of interest, first because of the great number of men whose army experience has brought to light their need for medical and particularly psychiatric help. This fact may be vividly portrayed by these figures: An average of 8 to 10 per cent of men examined for military service are rejected for psychiatric reasons, and nearly 30 per cent of the discharges from the Army are for psychiatric reasons. In contrast, only 2 per cent of the medical profession are psychiatrists. The social implication of these figures is enormous, but their importance to the medical profession is even greater.

Every internist is aware of the fact that even in normal circumstances in our prewar practice between 40 and 60 per cent of the patients seeking medical help present only functional disturbances. One major medical result of the war experience is the compelling necessity to focus our attention on a large section of our population who need and should have medical care and who previously may not have recognized this need themselves. No doubt there will also be a considerable increase in the number of individuals with disabling functional illnesses seeking help from the medical profession in every specialty.

How effective is the medical service in the Army? Comparatively few civilian physicians have any opportunity to see their army confreres in action. As one of your number until six months ago, it has been my privilege to visit and live in and inspect more than fifty of our army hospitals. I must report that I am greatly impressed with the efficiency of the medical organization of the Army. It is nothing short of remarkable that approximately forty thousand American physicians, a profession composed of rank individualists, can be brought together from all sections of the country, placed in a strange environment, thrown together with unfamiliar associates and within a few months be a highly efficient functioning medical group. This is what one finds in our station and general hospitals, both fixed and mobile. The caliber of medicine in every hospital I have visited in the seven states of the Fourth Service Command is comparable to or superior to that practiced in many of our old established civilian hospitals. Much of this efficiency is due to the excellent leadership and organization ability afforded by the regular army medical officers in charge of the hospitals and through them the guidance provided by the service command surgeons and the Surgeon General and his staff. Despite the lack of trained psychiatrists and the lack of facilities, the caliber of neuropsychiatry practiced in the Army is surprisingly good.

In presenting the psychiatric problems in the Army it may be helpful to review these in the chronological stages of the average soldier's experience, that is the induction center following his arrival in camp, at the station (or general) hospital and finally in the combat area. Unfortunately for many, there will be eventually another stage in the convalescent hospital.

## INDUCTION CENTER

It is no secret that we are continuing to build a large army at great speed, taking in thousands of men every day. These men report first to our induction centers for one day, where the chief purpose is to examine the man and determine his qualifications to fit into the Army. A major consideration in this examination is the evaluation of his personality. In private practice this job requires several hours to even days or weeks. In the average induction center it is given one to three minutes. In many of our induction centers we have only two psychiatrists for the simple reason that there are no more available. These two men have the impossible job of attempting to evaluate the life adjustment and the mental stamina of from 300 to 500 men a day.<sup>1</sup> It is presumed that they must be crystal gazers, being able to look at a man thirty seconds or maybe as long as a couple of minutes, and determine whether he is going to fit into the Army and whether he will make a fighting soldier.

In a few of our induction centers available civilian medical men are used and in a very few instances it is possible to follow the original War Department directive of one psychiatrist for each fifty men examined. In most of our induction centers we are far below this percentage of psychiatrists. Even with this woful lack of manpower we are finding an average rejection rate for mental disorders of 10 per cent of all inductees examined. In our induction boards in which a more careful examination is made, this figure rises to 15 per cent, and even higher.

From the total point of view, the induction boards are doing an excellent job with the facilities at hand. Many aids and techniques have been developed to make our examinations more effective, even in psychiatry.<sup>2</sup> But from the point of view of the individual psychiatrist, we are keenly aware that we are doing an inadequate job. There is no way we can avoid missing certain types of psychopathic characters. We cannot always identify the individuals addicted to chronic alcoholism who want to hide this fact from us. We cannot discover the epileptic who tell us untruths or if it is their desire to get into the Army who fail to tell us at all. One or two minutes is insufficient time to evaluate carefully a man with mild neurotic symptoms and whether these may in some cases be capitalized on illegitimately or on the other hand minimized.<sup>3</sup> The civilian physician could often be of tremendous help to the psychiatrist on the induction board if, through his local draft board, he would report on those men who are known in the community to be maladjusted, irresponsible, alcoholic or epileptic particularly when the individual has been under his care. Very few draft boards supply any social histories even of such facts as serious mental illness or court records.

<sup>1</sup> Porter W. C. *Military Psychiatry* War Med. 2: 543 (July) 1942.

<sup>2</sup> Flicker D. J. *Psychiatric Induction Examination* War Med. 2: 931 (Nov.) 1942.

<sup>3</sup> Brussel J. A. and Welpert H. R. *The Psychoneurose in Military Psychiatry* War Med. 3: 139 (Feb.) 1943.

There is a major responsibility involved in every decision that the psychiatrist makes regarding an inductee. For every case he approves for the Army which turns out to be a misfit or a psychiatric casualty, the cost in money and morale is inestimable. We know that the psychiatric casualties of the last war have occupied more beds in veterans' hospitals and have cost more money following discharge than all other cases together. Each man is estimated to have cost approximately \$30,000.<sup>4</sup> The cost in investment of time and equipment to train a soldier in a fighting unit only to have him break or become a misfit is an undetermined but undoubtedly a large figure. The cost to the unit in morale, particularly if it occurs in combat in a foreign land, is devastating. Equally important is the fact that these men often are indirectly a great loss to the home front. Undoubtedly there are many individuals whose adjustment to life may not have been entirely satisfactory, even from their own point of view, but they have been an asset in the community, they have contributed in helpful occupations and if permitted to run their own lives and put in their eight hours a day could maintain their adjustment. When we make the mistake of forcing such a man into the Army with its discipline, its necessarily regimented way of life, its close proximity to people twenty-four hours a day, its many and varied threats, he cannot "take it" and he is not only lost to the community but lost to the Army and to himself.

It is important, further, that some consideration be given to the men who are turned down by the Army. The Surgeon General's Office issued a letter many months ago directing that every medical officer use the greatest consideration in turning a man down and suggested that advice be given the rejectee as to what help he might obtain. In a few larger communities social agencies are at work<sup>5</sup> in connection with the draft boards attempting to relocate these men and to provide them with advice and medical help in relation to their course following rejection.

Our great psychiatric problem, then, for the induction center is concerned with the fact that we are raising an immense army at great speed. We lack sufficient psychiatrists to examine the inductees adequately. It is the local draft board's responsibility, and through it every civilian physician, to aid not only in the selection of these men but in supplying medical and social histories about them. The opportunity to aid in the adjustment of the men who are returned by the induction board as unacceptable to the armed forces will also fall to the medical profession.

#### STATION HOSPITAL

Every civilian who comes into the Army must make radical readjustments and do so promptly if he is to fit into the organization. This adjustment is not easy and the result is that a large percentage of our breakdowns and our misfits, both physical and mental, make their appearance within the first few weeks.<sup>6</sup> Many

of these men can be salvaged and for this reason in each of our large basic training camps, which are called replacement training centers, there are special training units under the direction of a psychiatrist.<sup>7</sup> In these training units the individual is given special opportunities to fit into the program at a little slower pace. Many such individuals who fail too flagrantly are discharged at this point in their training. Those who need hospital care or attention are referred to the station hospital, and in the smaller camps and the camps for advanced training the hospital serves as the clearing agency as well as the treatment center.

In our Army hospitals there are two types of problems confronting psychiatrists, administrative and clinical. In many ways these are inseparable and they also apply to every other field of medicine as practiced in the Army.

A major administrative problem confronting every army psychiatrist is the discharge procedure from the Army. Approximately half the soldiers admitted to the neuropsychiatric sections of our hospitals are recognized as being unfit for the Army. These men constitute nearly one third the discharges for all causes. It is the psychiatrist's responsibility not only to study his case and work up the hospital record but to engineer the discharge of the patient. Since different procedures are necessary for officers and enlisted men and different methods of discharge prescribed for different types of psychiatric diagnoses, considerable experience is required to expedite the discharge and the actual disposition of the patient. And, further, each case requires considerable investment of time. This investment of time becomes a major consideration from two angles: the shortage of psychiatrists and the filling of the wards with long-time patients for whom there is little opportunity for rehabilitation as a soldier.

A considerable number of physicians have been assigned to neuropsychiatric sections who have never had either training or special experience in this field, but the shortage of men has made this necessary. This situation is an additional handicap for every one and the lack of familiarity with diagnostic experience often contributes to slowing the disposition of the patient. A constant headache for every army psychiatrist is the arrangement for and actual transfer of his psychotic patients to a civilian or government hospital. The mechanics of this transfer are such that a soldier may in some cases have to remain for months in the army hospital occupying space and time from the medical officer that should be given to the potential soldier who can be rehabilitated for army service.

Because of the geographic nature of this war with the combat zones in foreign lands, special care must be used to eliminate the unstable. Our discharge rate of psychiatric cases might be materially reduced if our induction boards could be adequately staffed with psychiatrists. As the situation now stands, the rate will probably increase. Until the very recent past, too many unstable individuals were undetected and many were kept in the Army on the probably correct assumption that in a relatively protected environment they could function fairly effectively. But there is no guaranty that a relatively protected environment can be provided.

<sup>4</sup> Lewy, Ernest. Compensation for War Neuroses, *War Med* 1: 887 (Nov) 1941.

<sup>5</sup> Solomon, Alfred P. A Follow Up Study of Selectees Rejected for Psychiatric Reasons, *Dis Nerv System* 4: 78 (March) 1943.

<sup>6</sup> Simon, Alexander, Hagen, Margaret, and Hall, R. W. A Study of Specific Data in the Lives of One Hundred and Eighty Three Service Men Admitted to St. Elizabeths Hospital, *War Med* 1: 387 (May) 1941.

Bailhe, William. A Summary of Two Hundred Neurological and Psychiatric Admissions to the Canadian Army Service Forces, *Am J Psychiat* 97: 753 (Jan) 1941.

In the study by Col. H. M. Thomas Jr. of meningococcal meningitis and septicemia in the Fourth Service Command, it was found that twice as many cases of meningitis developed in new troops as occurred in seasoned troops, and the mortality was four times as great in the new troops.

<sup>7</sup> Stilwell, L. E., and Schreiber, Julius. Neuropsychiatric Program for a Replacement Training Center, *War Med* 3: 20 (Jan) 1943.

Halloran, R. D., and Farrell, M. J. Neuropsychiatrists in the U. S. Army: Their Functions in General and in Relation to Replacement Training Centers, *Army M Bull* 65: 151 (Jan) 1943.

In March the War Department reported that too many men who were mentally unsuited for ordinary military duties had arrived overseas and again cautioned that special consideration must be given to eliminating such individuals. Until recently a soldier with a mild psychiatric problem could be placed on "limited duty," that is retained in the Army but not assigned to combat duty, but this classification is now eliminated. Probably necessitated by inadequate psychiatric judgment on the part of many medical officers, a directive has recently been issued that all soldiers in whom a mental diagnosis is made, unless they will be able to return to full duty, are to be definitely eliminated from the Army.

Another administrative problem confronting the army psychiatrist, probably more so than other specialists, is the treatment opportunities<sup>8</sup> for his patients. This is more of an administrative rather than clinical problem for the reasons that it is a question of time, facilities and assistants. In the army hospital all of these are at a great premium. Furthermore, the Army has as its chief aim the winning of the war. Consequently those individuals who cannot be made into fighting soldiers must be passed on to those established government, state and community agencies for their further care and treatment.

It is not to be construed, however, that treatment efforts are completely lacking in our neuropsychiatric setups. In the replacement training centers the psychiatrist often spends several hours in psychotherapy with a soldier. In our active consultation and outpatient clinics in the hospital, psychotherapy is widely used. Many of our hospitals are equipped with prolonged immersion tubes and pack beds. The Surgeon General's Office is making plans at the present time for the assignment of available occupational therapists to our army hospitals.

In most of the installations in the Fourth Service Command we have instituted an organized and planned occupation and recreation program, utilizing the aid of the Red Cross workers, nurses and ward attendants. Recently approval has been given for the use of shock therapy by qualified psychiatrists. Partially to solve the problem of too few psychiatrists, group psychotherapy has been used with some success.<sup>9</sup> In order to increase the effectiveness of these therapeutic efforts, the chief of the neuropsychiatric section in many of our hospitals in this command conducts a continuous training course in psychiatry for the nurses, ward attendants, occupational therapist and Red Cross workers.

In the clinical field there are many intriguing problems for the army psychiatrist. Various clinical pictures, rarely encountered in civilian practice, present themselves in great numbers. Severe nostalgia is extremely common and is recognized as a clinical entity,<sup>10</sup> enuresis in the adult is a common problem in the Army,<sup>11</sup> much more so than any one might have suspected somnambulism, particularly in the Navy, is

often a psychiatric problem, true malingering is probably rare, although except for special cases of compensation neurosis it is frequent in comparison with civilian practice.

Among the more severe mental reactions, anxiety attacks are most common. The anxiety is often acute though not attached to specific ideas, sometimes it is expressed in specific fears, undoubtedly it is often expressed in the form of somatic complaints. The most common acute psychotic episodes are schizophrenic in character. A special feature of many cases of this last type of illness has been the extremely short duration of the symptoms, lasting only a few days, or at most a couple of weeks.<sup>12</sup> The problem of feeble-mindedness<sup>13</sup> is an extremely important one. In view of the fact that we do not have labor battalions in this war, every man has to be able to be a fighting soldier or there is no place for him.

Individuals with psychosomatic complaints constitute a large portion of the practice in the gastrointestinal, cardiac and orthopedic services. These soldiers, because of the nature of their complaints, are referred directly to these services. From various sources, particularly combat areas, there is evidence that the gastrointestinal disturbances are probably most frequent. The importance of the psychologic factors in the production of even the peptic ulcer is summarized by Thomas<sup>14</sup> as follows: "When viewed in a broad way, the mass of experimental and clinical observations which have been published recently emphasize the large part that is played by psychic factors in the production and continuation of peptic ulcer. A study of cases of peptic ulcer in the Army lends further proof to this concept." The great majority of cases seen in our army hospital gastrointestinal wards have not progressed to the ulcer stage.<sup>15</sup> All represent fundamentally a total personality disturbance and as such are primarily psychiatric problems. If regarded as such and so treated, many of these soldiers may be salvaged.

The so-called neurocirculatory asthenia,<sup>16</sup> brought to light in the last war, continues to be a fairly frequent finding, although it is too often regarded as having an entirely organic basis. Every army orthopedist is confronted too frequently with a syndrome of low back pain in which he finds no anatomic or physiologic explanation. In many hospitals they are referred to the neuropsychiatric wards and unfortunately they are rarely salvageable for the Army. One of the most common problems in this group of psychosomatic disturbances is headache in which no organic or chemical pathologic condition can be determined. They often present very difficult diagnostic problems. All of these reactions call for the closest of team work between the internist and the psychiatrist. The enormous frequency of their occurrence in the Army affords an unusual opportunity for research in the age old somapsyche relationships.

8 Porter W. C., Novak J. G. and Lemkau P. V. Therapeutic Considerations for Army Psychiatrists. *Mil. Surgeon* 92: 372 (April) 1943.

9 Hauptmann, Alfred. Group Therapy for Psychoneuroses. *Dis. Nerv. System* 4: 22 (Jan.) 1943. Blair, Donald. Group Psychotherapy for War Neuroses. *Lancet* 1: 204 (Feb. 13) 1943.

10 Wittson C. L., Harris H. I. and Hunt W. A. Cryptic Nostalgia. *War Med.* 2: 57 (Jan.) 1943.

11 Wadsworth M. I. A Psychiatric Study of Persistent Enuresis in Adults. read before the American Psychiatric Association, Detroit, May 11, 1943.

12 Klow S. D. Acute Psychoses in Selected Illinois. *M. J.* 87: 125 (Feb.) 1943.

13 Menninger W. C. The Problem of the Mentally Retarded and the Army. *Tr. Am. A. Study Ment. Deficient* to be published.

14 Thomas H. M. Jr. Peptic Ulcer in the Army. *South. M. J.* 36: 28 (April) 1943.

15 Skolka J. S. Functional Gastrointestinal Diseases at Lawsc. General Hospital, South. M. J. to be published. Dunn.<sup>15</sup>

16 Oppenheimer B. S. Neurocirculatory Asthenia and Related Problems in Military Medicine. *Bull. New York Acad. Med.* 18: 67 (June) 1942.

## COMBAT AREA

The regimental surgeon deserves more than passing comment in his very important function of caring for the medical and public health problems of his regiment. Were it possible for these men to have psychiatric training, it seems possible that they would have more opportunity to use this experience than any other specialty of medicine. It is these officers who live with their soldiers in the field, who have the first hand contact with them in daily life, that are in the optimum position to help the average soldier adjust to the stresses and strains of discipline and hardship. To these regimental medical officers falls a major responsibility in the combat areas with assistance from all the other medical field units, the surgical auxiliary teams, the first aid stations, the evacuation units, the numbered station and general hospitals.

To date our reports as to the number and type of our own psychiatric casualties have been meager. There is no doubt that such are occurring and we will probably find the same types reported by the British.<sup>17</sup> The disturbances are predominantly psychoneurotic reactions with anxiety states and hysteria most common. In the anxiety state there may or may not be definite fears. Nearly always there is insomnia, exhaustion and depression. Usually there are psychosomatic symptoms such as dizziness, nausea and vomiting, headaches, palpitation and tremor. The clinical picture in hysteria differs somewhat. It was my privilege to see a considerable number of such cases in one of our army general hospitals. There is almost a stereotyped story of a near hit by a bomb or shell, perhaps killing the other soldier in the same fox hole. The patient was "blown out" of the hole, sometimes presumably being injured by "hitting a nearby tree" or being thrown "thirty feet." This is then followed by a confused period of hours to days. Sometimes there were conversion symptoms: paralysis, anesthesia, aphonia, which cleared in a few hours to two weeks. Always the soldier was "jumpy" and "jittery." Many of the men seen had completely recovered.

A vivid description of neurotic casualties and their background which occurred in our own troops as the result of combat was presented at the recent meeting of the American Psychiatric Association in Detroit by Smith<sup>18</sup> who examined 500 Marines with psychoneuroses at the Mare Island Hospital. He described them as a group of neuroses which has not been seen before and may never be seen again. They occurred in men who had been subjected to prolonged warfare, often several weeks. He discussed them vividly. "All of them in their composite story give a picture of physical and mental strain that combines the best of Edgar Allan Poe and Buck Rogers. One cannot help but believe that the enemy made a careful study of our psychology and our ways of thinking and living, and used this knowledge against us. Most of us consider the night as a time for rest. The Japs centered their activities during this period. They were taught a few American words or phrases, chiefly threatening or profane, and the dark hours were filled with this abuse. They were machiavellian in their cleverly timed bombings and raids."

"All of these men lost weight and none of them were pudgy when they landed on the beach. Weight losses in muscular, toughened young adults ran as high as 45 pounds. Rain, heat, insects, dysentery, malaria all contributed—but the end result was not blood stream infection nor gastrointestinal disease, but a disturbance of the whole organism, a disorder of thinking and living, of even wanting to live."

"Fear of all kinds had to enter into the causative picture. Most men experienced fear as they approached the beach. Some tell you of their fear of being afraid and of feeling relief and exhilaration as soon as they went into actual combat. But new attacks, new near bomb hits would relight sudden fear. As the weeks passed, hope left most of these men. Soon they were sure that they were expendable, doomed. Fatigue wore them down, painful aching fatigue that they felt could never be relieved or cured."

Smith indicates that as a result of their ocean trip many of them were much better. They continued to show symptoms, sensitivity to sharp noises, tenseness, tearfulness. Approximately 30 per cent were sent back to limited duty. Many of them hang very much in the balance. In my own contact with a similar group of men, one could not be other than literally thrilled with their courage, with their desire to return to the fight, with their intense hatred of the enemy and the affection for their "buddies."

The early and prompt treatment of combat casualties is strongly recommended, and a surprising number, roughly 50 per cent, of these individuals can be returned to the fighting front.<sup>19</sup> The use of sedatives in large doses over several days has been effective in many instances. It has been learned that in general the farther the patient is removed from the field of action without treatment having been given, the more likely is his symptom complex to become fixed.

## SUMMARY

The psychiatric problems of the armed forces are, first the lack of psychiatrists and other trained personnel. From a long range view of not only the immediate problem but also for the tremendous postwar job, short intensive psychiatric training courses for physicians are very much in order. Our only answer to the immediate difficulty is to enlist and train assisting personnel who in any measure can aid in carrying the burden. This should include the utilization of psychologists, social workers, nurses and occupational and recreational therapists.

The second major concern confronting every physician, both in and out of the Army, is the number of psychiatric cases which the war experience has disclosed in our general population. The medical and social implications of this group are beyond our present ability to estimate.

The third major problem confronting the army psychiatrist is the rapid and most effective disposition of these maladjusted individuals in the Army. The first purpose of the Army is to win the war, and consequently these soldiers unfit for service must be given over to the care of civilian agencies and civilian physicians with the hope that they will accept the responsibility and provide treatment for these men in accordance with our most modern psychiatric concepts.

17 Love, H. R. *Neurotic Casualties in the Field*, M. J. Australia 20 137 (Aug. 22) 1942. Rees, J. R. *Three Years of Military Psychiatry in the United Kingdom*, Brit. M. J. 1 1 (Jan. 2) 1943.  
18 Smith, E. R. *Neurosis Resulting from Combat*, Am. J. Psychiat. 100 94-97 (July) 1943.

19 Dunn, W. H. *Gastrointestinal Disorders: An Important Wartime Medical Problem*, War Med. 2 967 (Nov.) 1942.



ORCHIECTOMY IN THE TREATMENT  
OF CANCER OF THE PROSTATE GLANDHERMAN L KRETSCHMER, MD  
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There seems to be a prevailing notion that, once a diagnosis of cancer of the prostate has been made, all that is necessary to effect a cure is to perform an orchiectomy. It is extremely unfortunate that this opinion has become so widespread since this form of treatment is of recent origin, I do not believe that enough time has elapsed since the procedure was instituted to talk about cures. The conclusions are hasty, since most statistical studies on the curability of cancer are based on five and ten year cures.

My results have not been as satisfactory as one would be inclined to believe they should be, judging from the literature. Those who have had experience with this treatment should report their results, as was recently done by Randall, who had treated 5 patients by this method. Four of the patients on whom he performed bilateral castration are dead and the fifth, although living, has extensive bone metastases.

I report here my experience in 11 cases.

## REPORT OF CASES

**CASE 1**—Dr T W aged 67 was admitted to the Presbyterian Hospital on Aug 19 1939 because of symptoms and signs of prostatic obstruction for which a transurethral resection was performed. The sections were reported as benign hypertrophy. Rectal examination at this time was negative for signs of cancer.

The patient was readmitted on Feb 6 1941 because of a return of his symptoms. Rectal examination at this time disclosed a good deal of infiltration and hardness of the right lobe of the prostate with some involvement of the seminal vesicle. A transurethral resection was performed and the sections were reported as adenocarcinoma.

He was admitted for the third time on June 1 1941 because of profuse hematuria, pain, chills and fever. There were palpable lymph nodes in the right groin and a definite swelling of the right lower extremity. Roentgen examination revealed no evidence of bone metastases. He was placed on diethylstilbestrol 1 mg three times a day.

He returned to the hospital on Aug 9 1942 complaining of severe pain in the penis and perineum on urination. The pain radiated down both legs to the heels. Blood was present in the urine. At this time the patient stated that because of the severity of the pain he was taking dilaudid every three hours. There was a slow but constant loss of weight. Rectal examination again disclosed a very hard irregular nodular prostate. Blood pressure was 160 systolic 90 diastolic. Blood examination revealed 3 040 000 erythrocytes, 9 500 leukocytes and 12 Gm of hemoglobin. Urinalysis revealed albumin and pus cells. Roentgen examination was negative for bone metastases.

A bilateral orchiectomy was performed on August 11 following which the patient was able to go for nine hours without dilaudid. There was some improvement in the perineal and leg pain and in the pain on urination.

The patient reentered the hospital on Sept 20 1942 because of severe pain in the bladder pain on urination and a steady increase in the obstructive symptoms. Nonprotein nitrogen was 47 mg per hundred cubic centimeters of blood. Roentgen examination disclosed no bone metastases. Acid phosphatase was 4.5 alkaline phosphatase 11.2. The bleeding points were fulgurated and the necrotic tissue was resected. The patient was discharged in four days.

Thereafter he continued to pursue a steady downhill course. The pain was very severe and was not controlled by large doses of morphine. The patient died on Jan 18 1943 five months after the orchiectomy.

**CASE 2**—Dr A S, aged 72, was admitted to the Presbyterian Hospital on Sept 15, 1942 complaining of nocturia, frequency, a small stream and severe pain in both hips for three months and in the lower back for six months. There had been a loss of 40 pounds (18 Kg) in the past two years.

Physical examination revealed a mass in the abdomen which was hard irregular and about the size of an orange, and located to the right of the umbilicus. On rectal examination the prostate was found to be enlarged, hard, nodular and fixed. Blood pressure was 118/62. Blood examination revealed 3,940,000 erythrocytes, 8,000 leukocytes and 12 Gm hemoglobin. Urinalysis disclosed many pus cells. Nonprotein nitrogen was 52 mg per hundred cubic centimeters of blood. Roentgen examination revealed the presence of metastases to the pelvic bones.

Bilateral orchiectomy was performed on September 21. Within three days the patient thought the pain in the back and legs was better. There was much improvement in his appetite. He was discharged on the thirteenth postoperative day (October 4).

The patient was readmitted to the hospital nine months after the orchiectomy, complaining of loss of weight, weakness and pains in the thighs requiring codeine for relief. There was an increase in the low back pain, making turning or bending almost impossible. Roentgen examination disclosed definite increase in the bone metastases to the pelvis, there was now present evidence of metastases to the spine and ribs.

The patient died on July 3, 1943, nine months after the orchiectomy.

**CASE 3**—G O, aged 68, was admitted to the Presbyterian Hospital on Oct 7, 1940 complaining of both day and night frequency of urination, difficulty in starting the stream, pain on urination, complete retention and dribbling after urination.

Physical examination was negative except for an umbilical hernia and a suprapubic tumor due to the distended bladder. Rectal examination disclosed an enlarged, hard, nodular prostate. Blood pressure was 140/80. Blood examination was normal. Urinalysis revealed red blood cells 4+, white blood cells 1+, no sugar or albumin. Roentgen examination did not disclose evidence of bone metastases.

A transurethral resection was performed on October 11. The sections disclosed adenocarcinoma. The patient was discharged on the fifth postoperative day.

He was readmitted to the hospital on June 22, 1942 because of a return of his urinary symptoms. A second resection was performed and again the microscopic diagnosis was adenocarcinoma. The patient was given diethylstilbestrol 3 mg daily.

He was admitted to the hospital for a third time on Oct. 20, 1942 because of severe pain in the right hip, pains in the legs and gross hematuria. Roentgen examination did not disclose evidence of bone metastases.

Bilateral orchiectomy was performed on October 22. Six months after the operation the patient again had severe pain in the perineum penis and legs and intermittent hematuria. He continued to fail progressively and died on Sept 30, 1943, eleven months after the orchiectomy.

**CASE 4**—D E, aged 68, was admitted to the Presbyterian Hospital on Jan 25, 1943 complaining of frequency of urination, every thirty minutes, and a nocturia of one to three times for the past five years. For three months he had severe pain in the back, right hip and right leg requiring codeine and acetylsalicylic acid. Five days before admission he developed gross hematuria. He was thin emaciated and extremely ill. Blood pressure was 176/100. The prostate was enlarged hard fixed and very irregular. Blood examination showed erythrocytes 3 090 000, leukocytes 12 000 and hemoglobin 11 Gm. Urinalysis disclosed albumin 2+, red blood cells and white blood cells. Roentgen examination revealed areas of bone destruction in the left pubic and sacral bones and in the region of the right acetabulum.

Transurethral resection and bilateral orchiectomy were performed on January 28. Sections disclosed carcinoma. Within eight days the patient could move his leg with much less pain and was able to turn himself in bed. Sedation was no longer required. He left the hospital on February 21. Eight months after orchiectomy there was a recurrence of pain in both hips.

and legs and considerable swelling of the legs. Appetite was poor and he was beginning to lose weight.

CASE 5—H F, aged 66, was admitted to the Presbyterian Hospital on Dec 22, 1942 complaining of nocturia, difficulty in starting the stream, and a thin stream for two years. He had two attacks of hematuria two months previously.

Physical examination disclosed a soft systolic murmur at the apex, and a palpable liver. On rectal examination the prostate was found to be enlarged, hard and fixed, with a definite nodule on the left lobe. The blood pressure was 150/90. Blood examination was normal. Urinalysis revealed albumin, blood and an occasional white blood cell. Nonprotein nitrogen was 38 mg per hundred cubic centimeters of blood. Roentgen examination disclosed no evidence of bone metastases.

On December 24 a transurethral resection was performed. The sections revealed adenocarcinoma. A bilateral orchietomy was performed on December 30. The patient was discharged from the hospital on Jan 9, 1943. Seven months following orchietomy a letter from the patient's local doctor stated that there was no difficulty of urination, no albumin or sugar in the urine, and that since the operation the patient had complained moderately of pain in the sacral region, extending down the right leg.

#### Results of Orchietomy in Eleven Cases

Name	Age	Duration of Symptoms	Bone Metastases	Time Since Orchietomy	Result
1 Dr T W	67	1½ yr	+	5 mo	Died
2 Dr A S	72	6 mo	+	8 mo	Died
3 G O	68	2 yr	0	11 mo	Died
4 D E	68	5 yr	+	6 mo	Pain in hips and legs, swelling of legs, loss of weight
5 H F	75	2 yr	0	7 mo	Moderate pain in sacral region extending down leg
6 H W	75	4 yr	0	11 mo	No change in leg pains
7 E L	75	6 mo	+	9 mo	Bedridden, loss of weight, frequent use of morphine, increase in bone metastases, with new areas of involvement
8 G S	60	2 yr	0	6 mo	Painful urination, gross hematuria
9 W R	77	5 yr	0	11 mo	Improved
10 F W	77	2 yr	0	7½ mo	Feels well
11 J C	67	3 mo	+	4 mo	Improved

CASE 6—H W, aged 75, was admitted to the Presbyterian Hospital on Aug 24, 1942 complaining of frequency of urination both day and night for four years. In addition, he complained of pain in both legs on walking and the loss of 20 pounds (9 Kg) in one year. He had had a transurethral resection of the prostate in another hospital and the sections were reported as adenocarcinoma. Rectal examination disclosed the prostate to be enlarged and hard, but smooth. Blood pressure was 195/75. Blood examination was normal. Urinalysis revealed albumin and pus cells. Roentgen examination did not disclose evidence of metastases.

Bilateral orchietomy was performed on August 25. The patient was discharged on the eighth postoperative day. In the eleven months since orchietomy he has gained 10 pounds (4.5 Kg) and his appetite is good, but there has not been any change in the pains in the leg.

CASE 7—E L, aged 75, was admitted to the Presbyterian Hospital on Oct 20, 1942 complaining of frequency of urination both day and night, and pain in the right hip for six months. The prostate was enlarged, hard and nodular. The blood pressure was 160/80 and the blood count normal. Urinalysis was negative. Nonprotein nitrogen was 29 mg per hundred cubic centimeters of blood. Roentgen examination disclosed destruction of the body of the third lumbar vertebra and of the right iliac bone, suggesting metastases.

Transurethral resection and bilateral orchietomy were performed on October 23. The sections disclosed adenocarcinoma. Following the operation the patient stated that there was definite improvement in the pain in the hip. Nine months after orchietomy he was completely bedridden with severe pain in

both hips which required frequent use of morphine. There was progressive loss of weight. A recent roentgen examination revealed definite increase in the bone metastases.

CASE 8—G S, aged 60, was admitted to the Presbyterian Hospital on Jan 17, 1943 complaining of frequency, urgency, nocturia, difficulty in starting the stream, a slow thin stream and dysuria, which had been present for two years. Rectal examination disclosed a hard, fixed, enlarged and nodular prostate. Blood pressure was 160/90. Blood examination revealed erythrocytes 4,700,000, leukocytes 7,000 and hemoglobin 14.5 Gm. Urinalysis was negative. Nonprotein nitrogen was 32. Roentgen examination disclosed no evidence of bone metastases.

Transurethral resection was performed on January 19 and the sections revealed adenocarcinoma. On January 28 bilateral orchietomy was performed.

Six months after his discharge from the hospital the patient complained of pain on urination, which had become steadily worse. There have been intermittent attacks of gross hematuria.

CASE 9—W R, aged 77, was admitted to the Presbyterian Hospital on June 18, 1942 complaining of frequency of urination both day and night for five years, a small, thin, weak stream for three years, and complete retention for eighteen hours. The patient had lost 20 pounds (9 Kg) in the preceding three months. He was drowsy and fatigued.

Physical examination was essentially negative, except for a distended bladder. Rectal examination revealed the prostate to be enlarged, hard, fixed and nodular, and there was an extension of the carcinoma beyond the capsule. The blood pressure was 99/52. Blood examination was normal. Urinalysis disclosed albumin 2+, a few red blood cells, and 100 white blood cells to the low power field. Nonprotein nitrogen was 46 mg per hundred cubic centimeters of blood. Roentgen examination did not disclose evidence of bone metastases.

A transurethral resection was performed on June 23 and the sections were reported as benign prostatic hypertrophy, though this did not fit in with the findings on rectal examination. The patient was given diethylstilbestrol 3 mg daily. He was readmitted to the hospital on Aug 9, 1942 because of frequency, nocturia and persistence of pyuria. On Aug 12, 1942 a transurethral resection and bilateral orchietomy were performed. The sections again disclosed hyperplasia. He left the hospital on Sept. 4, 1942. A letter from his local physician eleven months after orchietomy stated that the patient was as normal as any man could be at his age.

CASE 10—F W, aged 77, admitted to the Presbyterian Hospital on May 18, 1942, had been obliged to void one or two times at night for the preceding ten years. He had slight burning on urination, frequency during the day and a small stream. Physical examination was negative except for a distended bladder that reached to the umbilicus. The prostate was enlarged, hard and nodular. Blood pressure was 138/58. Blood examination revealed erythrocytes 3,008,000, leukocytes 6,500, hemoglobin 12.5 Gm. Urinalysis disclosed blood cells in the sediment. Nonprotein nitrogen was 38 mg per hundred cubic centimeters of blood. Roentgen examination did not disclose evidence of bone metastases.

Transurethral resection was performed on December 12. The sections disclosed adenocarcinoma. Following resection the patient was unable to void and a second resection was performed on December 22. Bilateral orchietomy was performed eight days later. Convalescence was uneventful and he left the hospital on Jan 13, 1943. Seven and a half months after orchietomy there was no change in the prostate on rectal examination, however, the patient stated that he felt well.

CASE 11—J C, aged 67, admitted to the Presbyterian Hospital on March 9, 1943, had had symptoms for three years consisting of both day and night frequency, a slow, thin stream and difficulty in starting the stream. He had lost 8 pounds (3.6 Kg) during the past three months. Pains in the right hip and leg had been present for three months.

Physical examination was essentially negative. On rectal examination the prostate was found to be enlarged, very hard and slightly irregular. Blood pressure was 136/80. Blood examination was normal. Urinalysis disclosed a trace of albumin but was otherwise negative. Nonprotein nitrogen was 39 mg per hundred cubic centimeters of blood. Roentgen

examination revealed metastases involving the fifth lumbar vertebra the sacrum and both pubic bones

Transurethral resection was performed on March 11, 1943. Microscopic diagnosis was adenocarcinoma of the prostate. On March 25 a bilateral orchiectomy was performed. The patient was discharged from the hospital on April 6. A report from the local doctor stated that the patient was feeling well, only four months after the operation.

#### COMMENT

From a review of the table it is evident that the results are anything but desirable. Three of the patients are dead five, eight and eleven months respectively after orchiectomy, 1 patient is bedridden, requiring frequent doses of morphine, 3 patients have pain, 1 patient has painful urination and attacks of hematuria, 1 patient states that he is improved eleven months after orchiectomy, another seven and a half months and 1 four months.

Some of the patients experience a feeling of well being immediately after orchiectomy. In 2 of the patients who died this was indeed short.

The time is ripe to evaluate and to correct misconceptions concerning the efficacy of castration in the treatment of cancer of the prostate.

In the evaluation of this form of treatment it should be remembered that in cancer in other parts of the body statistical results are based on five or ten year studies of so-called cures.

122 South Michigan Avenue

### SUPPURATIVE MYOSITIS AND PURULENT ARTHRITIS COMPLICATING ACUTE GONORRHEA

#### REPORT OF A CASE

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The rarity of suppurative gonococcal myositis and the recent interest in the effectiveness of penicillin in cases of gonococcal infections that are resistant to sulfonamide therapy<sup>1</sup> has prompted the present report.

#### REPORT OF CASE

A Negro youth aged 16, single, entered the hospital on May 20, 1943 complaining of pain and swelling in the left calf and left knee.

Three weeks prior to entry, and four days after his last sexual exposure, the patient had noticed the onset of urinary frequency, burning and pyuria. Two days following the onset of urinary symptoms he applied for treatment in the genitourinary clinic of the outpatient department where gonococci were cultured from the urethral exudate. He was given nine daily instillations of potassium permanganate solution into his anterior urethra, and sulfathiazole was prescribed for oral use. The patient took 4 Gm of sulfathiazole on the first day and 3 Gm. daily for two weeks. After seven days of this therapy all urinary symptoms had disappeared, the urine became clear and the patient apparently was cured. However two days later he began to have cramplike pain in his left calf. The calf became swollen and increasingly painful and tender. Four days later the left knee joint became stiff, painful and swollen. Sulfathiazole was continued for another day but progression of pain and swelling in the leg caused the patient to stop taking the drug and three days later he entered the hospital.

At the age of 3 the patient had severe rickets, necessitating bilateral tibial osteotomies, the results of which were excellent. At 11 years he had pneumonia of the right lower lobe followed by bronchiectasis of that lobe, which was successfully treated by lobectomy. He admitted numerous sexual exposures since the age of 9 years.

The patient was well developed and nourished and was in no apparent distress. Except for a long lunar scar on the right side of the thorax and bilateral scars at the sites of the tibial osteotomy, abnormal physical findings were confined to the left leg. The left calf was swollen so that its circumference was approximately twice that of the right. The entire left calf was swollen, indurated, hot, exquisitely tender and slightly fluctuant. The overlying skin was tight and shiny but otherwise normal. The left knee was greatly enlarged, tense, hot and tender. It was held in slight flexion and could not be moved more than 5 degrees from this position. Fluctuation was present and the patella was ballotable. No abnormalities of the external genitals or prostate were detected. The temperature on entry was 99 F, the respirations were 20 and the pulse rate was 100. The blood pressure was 140 mm systolic and 80 mm. diastolic.

On admission the urine was normal except for an occasional leukocyte. The hemoglobin was 85 per cent, the leukocyte count was 15,000 per cubic millimeter, of which 88 per cent were polymorphonuclears. Blood culture yielded no growth, the gonococcus complement fixation test was positive and the blood Hinton reaction was negative. The nonprotein nitrogen was 27 mg per hundred cubic centimeters. Aspiration of the left synovial cavity yielded 150 cc of a thin, yellow, purulent fluid, in which gonococci were demonstrable both on smear and on culture. Six days after admission, 30 cc. of a serosanguinous fluid was removed from the left calf. Numerous characteristic, gram negative intracellular diplococci were seen on smear of this exudate, and from it gonococci were easily grown on culture. Six blood cultures taken during the patient's stay in the hospital were all sterile. Prostatic smear and culture on June 8 yielded no organisms.

Strict bed rest was instituted, and a light cradle was placed over the patient's legs. On the day following admission, treatment with sulfamethazine was started. An initial dose of 4 Gm was given followed by 1 Gm every four hours thereafter for a period of nine days. Blood concentrations of the free drug averaged 8 mg per hundred cubic centimeters. After a week of this therapy there was no improvement in the leg infection and the patient's temperature on several occasions reached 104 F.

On May 27 the left calf was incised and drained by Dr. Stephen Bartlett. A 4 inch incision was made through the fascia into the pus pocket on the medial side of the left calf. The pocket, explored by finger, extended into and between the soleus and gastrocnemius muscles and was 4 inches long and 2 inches deep. A counter incision was made on the posterior aspect of the calf. Approximately 250 cc. of a bloody semipurulent fluid was removed. Gonococci were again grown from this exudate. Two Penrose drains were inserted. The wound was packed with iodoform gauze and irrigated twice daily with diluted solution of sodium hypochlorite. All pain, tenderness and swelling disappeared from the calf, and the wound completely healed in the course of six weeks.

The patient continued to have rises in temperature to about 104 F late each evening. On May 30 sulfamethazine was discontinued and was replaced by sulfamerazine, beginning with a 4 Gm dose followed by 1 Gm every six hours. On the next day fever therapy was started. Daily injections of typhoid vaccine were given intravenously during seven consecutive days, the individual doses being increased gradually from 30 million to 100 million organisms. Each injection was followed by a shaking chill. Oral temperatures reaching 104 F for periods of six to seven hours were attained on two occasions, and 105 F for six hours on one occasion.

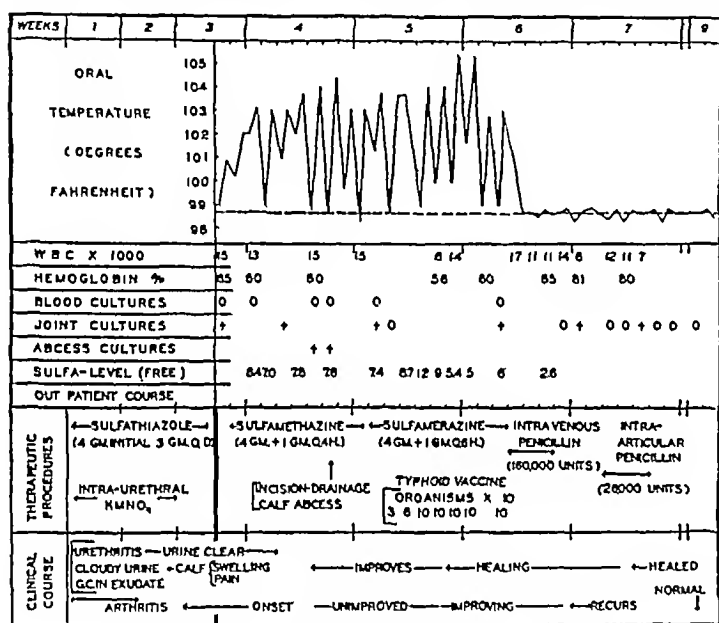
On June 7, although the fever had again subsided temporarily, there was no appreciable improvement in either the patient's general condition or the appearance of his knee. Both the sulfamerazine and the fever therapy were therefore discontinued. Aspiration of the knee joint at this time yielded 60 cc. of thin pus from which gonococci were cultured.

From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard) Boston City Hospital.  
J. Herrell, W. E. Cook, F. N. and Thompson, Luther. Use of penicillin in Sulfonamide Resistant (gonorrheal) Infections. J. A. M. A. 122: 289-292 (May 29) 1943.  
Keefer, C. S., Blake, F. G., Marshall, E. K., Jr., Lockwood, J. S. and Wood, W. B., Jr. Penicillin in the Treatment of Infections. *ibid.* 122: 1217-1224 (Aug. 28) 1943.

Beginning June 8, through the kindness of Dr Chester S Keefer and Dr Donald Anderson, the patient was treated with penicillin. At first he was given 10,000 Oxford units intravenously every three hours for forty-eight hours, the total dose by this route being 160,000 units. Immediately after this therapy the patient's temperature became and remained normal. The knee joint improved considerably, pain and temperature subsided and motion returned. There remained a slight swelling.

The improvement following the intravenous penicillin therapy continued for about a week, when a recrudescence of infection in the left knee occurred. There was again a slight increase in the size, temperature and tenderness of the joint. Aspiration on June 18 yielded 15 cc of thin yellow pus, from which gonococci were again cultured. The knee continued to swell, becoming increasingly painful and tender.

On June 24, 8,700 Oxford units of penicillin in 15 cc of sterile isotonic solution of sodium chloride was injected directly into the affected joint. This procedure was repeated on two successive days, the total dose injected being 26,100 Oxford units. Fluid aspirated on the day following the second injection contained living gonococci, but three subsequent cultures taken one, three and thirteen days after the third injection were all sterile.



Clinical course, laboratory findings and treatment

Following the third injection of penicillin, the left knee slowly decreased in size and all tenderness disappeared. On July 6 the patient was allowed up, and on July 14, fifteen days after admission, he was discharged, apparently cured. At this time the knee joints were the same in size and the patient walked without a limp. The calf incisions were well healed. The salient features of the clinical course, laboratory findings and therapy are shown graphically in the chart.

The patient returned three weeks after discharge, at which time both the left knee and the left calf appeared normal.

#### COMMENT

This case of acute gonorrheal urethritis complicated by suppurative myositis and purulent arthritis was treated with small daily doses of sulfathiazole. This resulted in an apparent cure of the anterior urethritis but did not prevent the subsequent development of suppurative myositis and arthritis. The soft tissue abscess was cured by incision and drainage. The purulent arthritis failed to respond to usual doses of sulfamethazine or to sulfamerazine supplemented by intravenous typhoid vaccine. Penicillin administered intravenously was followed by a temporary improvement. Only after the penicillin was injected into the synovial cavity did the symptoms and signs of arthritis disappear. Cultures of the synovial fluid became sterile only after the last instillation of penicillin into the joint.

Suppurative gonococcal myositis proved by smear and culture is an infrequent complication of gonorrhea. Jeck<sup>2</sup> stresses its rarity. Herlitz<sup>3</sup> states "In perusing the literature I have not been able to find more than a few cases where a gonorrheic infection localized to the muscles was demonstrated or even probable." Newburger<sup>4</sup> reports 7 cases of suppurative myositis in his review of the literature in 1926. None of these cases, however, would meet present day standards of bacteriologic diagnosis. Rubi's<sup>5</sup> comprehensive review included 21 cases of gonococcal myositis, 10 of which were of the suppurative form, the others showing a diffuse type of inflammation.

There is no uniform agreement in the literature concerning the mechanism of abscess formation. In most cases the abscess was preceded by a genital infection. The interval varied from a few weeks to several years. Most abscesses occurred by direct extension from an infected joint<sup>6</sup> and were more common than primary muscle abscesses. The most widely held opinion<sup>6</sup> is that the primary muscle or subfascial abscesses formed during a period of blood stream invasion in an area previously injured, the *locus minoris resistentiae*. In one of the cases reported<sup>4</sup> an abscess developed in an old hematoma. The muscles of greatest use are the ones reported as having been involved, these include the posterior axillary fold, the calf<sup>7</sup> and the thigh, as well as the psoas major, the latissimus dorsi,<sup>8</sup> the posterior tibial<sup>9</sup> and the masseter.

The treatment reported as being most successful<sup>10</sup> and that employed in this case, has been surgical incision with open drainage and daily irrigations. Our patient also received sulfamethazine before and after surgery.

This case may represent an example of the development of sulfonamide resistance following inadequate doses of the drug.<sup>11</sup> It was found that the strain of gonococcus from this case would grow readily on mediums containing high concentrations of the various sulfonamides.<sup>11a</sup> It is, of course, impossible to say whether or not the strain was originally sulfonamide resistant or whether it developed this resistance after exposure to the low concentrations of the drug used early in the course of treatment. Because the development of sulfonamide resistance has been demonstrated experimentally, the majority of workers in this field now recommend a compromise between the small 2 to 3 Gm daily dose and the full dose of 6 Gm daily as used in the treatment of lobar pneumonia.<sup>12</sup> The com-

2 Jeck, H. S. Nelson New Loose Leaf Medicine, New York and Toronto, Thomas Nelson & Sons, 1941, p. 2071.

3 Herlitz, S. Myositis Gonorrhoica, Acta dermat venereol. 10: 256-262 (May) 1938.

4 Newburger, B. Metastatic Intramuscular Gonococcal Abscess, Ann Surg 84: 879-885 (Dec.) 1926.

5 Rubi, R. A. Myositis blenorragica, Semana med. 41: 124-129 (July 12) 1934.

6 McCrea, Thomas, and Funk, E. H. Modern Medicine ed. 3, Philadelphia, Lea & Febiger 1925, Vol. 1, p. 673.

7 Wynn, W. H. General Gonococcal Infection, Lancet 1: 352-1905.

8 Ware, M. W. Gonorrheal Myositis, Am J M Sc 122: 40 (July) 1901.

9 Schlesinger, E. Apostematous Gonorrheal Myositis Deutsche med. arztl. Ztschr. 35: 357-1906.

10 Blumer, George. The Oxford Medicine New York Oxford University Press, 1940, vol. 5, pp. 62-63. Randall S. and Orr T. G.

Suppurative Subcutaneous and Subfascial Gonococcal Infections. Am J Surg 12: 117-119 (April) 1931.

11 Harris, N. M. and Haskell, I. W. Concerning a Case of Suppurative Myositis Caused by Micrococcus Gonorrheae (Neisser), Bull. Johns Hopkins Hosp. 15: 395-397 (Dec.) 1904.

12 Sulfonamide Fastness, editorial. J. S. N. M. Bull. 11: 1165 (July) 1943.

11a Dr. H. S. Ginsberg of the Thorndike Memorial Laboratory made this observation.

12 Cohn, Alfred. A Résumé of the Year's Research in Gonorrhea. Am J Syph. Gonorr. & Ven. Dis. 27: 403-410 (July) 1943.

Harrold R. D. Modern Management of Infections in Urinary Tract. J. Michigan M. Soc. 42: 190-195 (March) 1943.

Sulfonamide Fastness.

monly accepted dosage for the treatment of acute gonorrheal urethritis at present is 4 Gm of sulfathiazole or sulfadiazine every day for five to seven days. Though it cannot be stated with certainty, the urethral instillations of potassium permanganate may have been instrumental in the dissemination of the infection. Most medical authorities have condemned this practice in the treatment of acute gonococcal urethritis since the sulfonamides have come into use.<sup>13</sup> Fever therapy with intravenous typhoid vaccine was without effect in this case, and this has been the experience of most observers, although occasional satisfactory results have been reported with more intensive application of this form of treatment. The hypertherm cabinet is more effective than typhoid vaccine for fever treatment in such resistant cases of gonococcal arthritis.

Another interesting aspect of this case is the employment of penicillin, first intravenously without curative effect and then by local injection into the joint space which resulted in sterilization of the synovial fluid and relief of symptoms.

#### SUMMARY

A case of acute gonorrheal urethritis complicated by suppurative myositis and purulent arthritis was seen. The anterior urethritis was treated with potassium permanganate instillations intraurethraly and small doses of sulfathiazole by mouth with apparent success. The suppurative myositis responded to incision and drainage. The purulent arthritis was treated successfully with sulfamethazine, sulfamerazine and intravenous typhoid vaccine, intravenous penicillin and finally intrasynovial penicillin. Lasting improvement in the infected joint and sterilization of the synovial fluid occurred only after three intra-articular instillations of penicillin.

Suppurative gonococcal myositis is an infrequent complication. Inadequate doses of sulfonamide drugs and the use of urethral instillations or manipulations in the early treatment of the acute gonorrhea may be responsible for metastatic gonococcal infections.

13. Vonderlehr R. A., Adair F. L. and others. The Management of Gonorrhea in General Practice. *Ven Dis Inform* 24: 127 (May) 1943.

**Virus Transmission.**—The transmission of viruses occurs not only by man himself but also through the agency of certain insects. Most viral infections in man are transmitted directly from one infected individual to the next by direct contact. Usually it is not possible to speak more specifically than this, since the actual means of transfer of the agent is not known. In a few of the viral infections, for example yellow fever, the agent is transferred directly from one individual to another by the mosquito. The portals of entry for most of the human viruses are the skin and the mucous membranes of the nasopharynx and the intestinal tract. Some of the viruses produce generalized effects immediately following their invasion of the skin and mucous membranes, while others produce both a local lesion at the site of entry and other lesions in tissues quite far away. The typical lesion may occur not at the portal of entry but in the internal organs. Transmission along the axis cylinders of the nerves has been demonstrated conclusively by Goodpasture and his associates in the case of herpes virus but the possibility of spread of this virus also by means of the blood has been emphasized by the recent work of Anderson. There seems to be little doubt that the circulating blood is the usual means of dissemination of viruses in all those diseases characterized by widely disseminated lesions.—Forbes Wiley D. *Reaction to Injury*. Baltimore, Williams and Wilkins Company, 1943.

## CORD COMPRESSING LESIONS WITH NORMAL QUECKENSTEDT SIGN

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It is not an uncommon experience in neurologic practice to be presented with a patient having all the signs and symptoms of a compressing lesion of the spinal cord above the level of the second lumbar vertebra but with the complete absence of manometric block. Doubt will exist as to the etiologic explanation of the illness, but usually a neurosurgeon is eventually consulted and exploration is performed. Then one frequently finds a normal appearing spinal cord with no macroscopic evidence of neurologic disease.

Most authors who have written on this subject since Queckenstedt's original work in 1916 have referred to the diagnostic importance of spinal fluid block but have not indicated what should be done when this valuable sign is absent. Of 235 cases of this type reported by Stookey and Klenke<sup>1</sup> in 1928, 125 showed normal dynamics of the spinal fluid, and 10 of the patients underwent surgical exploration. Of the 10, 2 showed enlargement of the spinal cord (possibly intramedullary tumor), 4 atrophy, 1 intramedullary gliosis and 1 radiculitis of the cauda equina, in 2 the cord appeared normal. Stookey later concluded that herniated nucleus pulposus in the cervical region seldom produces block<sup>2</sup> and that adhesive spinal arachnoiditis occasionally does not.<sup>3</sup> Ayer<sup>4</sup> noted the possibility of a tumor of the spinal cord with normal dynamics of the spinal fluid and reported 1 case. Sachs and Glaser<sup>5</sup> recorded 2 cases without manometric block, while Soltz and Jervis<sup>6</sup> found 2 of 5 tumors of the cervical region producing no manometric abnormality. Pappen and Hurxthal<sup>7</sup> in 1934 reported a case of tumor of the spinal cord at the thoracic level with a normal Queckenstedt sign. They claimed that manometric abnormalities occur only if the opening left by the tumor and cord are smaller than the spinal needle, on the basis that the flow of the fluid through a larger opening cannot be measured through a smaller one.

This presentation of a few figures on the subject was stimulated by the numerous expressions of doubt as to the advisability of surgical intervention in the absence

Dr. Foster Kennedy gave invaluable aid in the preparation of this paper.

From the Neurologic Service, Bellevue Hospital (Cornell Division), Dr. Foster Kennedy (chief of service) and the Department of Psychiatry (Syracuse Psychopathic Hospital), Syracuse University College of Medicine (Dr. Fleiss).

1. Stookey, Byron and Klenke, Dorothy. A Study of the Spinal Fluid Pressures in Differential Diagnosis of Diseases of the Spinal Cord. *Arch. Neurol. & Psychiat.* 20: 84 (July) 1928.

2. Stookey, Byron. Compressions of the Spinal Cord and Nerve Roots by Herniation of the Nucleus Pulposus in the Cervical Region. *Arch. Surg.* 40: 417 (March) 1940.

3. Stookey, Byron. Adhesive Spinal Arachnoiditis Simulating Spinal Cord Tumor. *Arch. Neurol. & Psychiat.* 17: 151 (Feb.) 1927.

4. Ayer, J. B. Spinal Subarachnoid Block as Determined by Cerebral Cistern and Lumbar Puncture. *Arch. Neurol. & Psychiat.* 7: 38 (Jan.) 1922.

5. Sachs, Ernest and Glaser, Mark A. Definite Level Symptoms Suggesting Spinal Tumor. Study of Thirty Three Patients Subjected to Laminectomy. *J. A. M. A.* 88: 308 (Jan. 29) 1927.

6. Soltz, S. E. and Jervis, G. A. Extramedullary Tumors of the Upper Cervical Portion of the Spinal Cord. *Bull. Neurol. Int. New York* 6: 274 (Aug.) 1937.

7. Pappen, J. L. and Hurxthal, L. M. Normal Cerebrospinal Fluid Dynamics in Spinal Cord Tumor Suspects. *J. A. M. A.* 103: 391 (Aug. 11) 1934.



of manometric block. Such an expression is usually made shortly after an apparently normal cord has been exposed.

The problem occurs only when the level involved is above the cauda equina or the conus medullaris. Many space occupying lesions below the spinal cord do not change the dynamics of the spinal fluid. Most frequent of them is the herniated intervertebral cartilage. The level of the second lumbar vertebra was chosen arbitrarily to represent the lower limit of the spinal cord, and no lesions at or below this level were included in the present study. Conditions such as multiple sclerosis, neuromyelitis optica and virus infec-

a ruptured intervertebral cartilage or a tumor (table 1). In other words, 30 per cent of the patients in this series suspected of having a cord compressing lesion did have just such a pathologic condition, for which surgical measures are indicated, despite the absence of spinal block. Another 20 per cent (table 2) displayed a lesion in the nature of arachnoiditis or of pachymeningitis in which the separation of adhesions is known occasionally to result in mild improvement. The remaining 10 with exploration, or 50 per cent of the patients in this series (table 3), showed a normal appearance of the spinal cord, atrophy of the cord or other noncompressing pathologic change. An occasional

TABLE 1—Localized Cord Compressing Lesions

No	Pathologic Diagnosis	Protein Content, Mg per 100 Cc	Sensory Level	Sacral Anesthesia
1	Extramedullary endothelioma C7 D1	120	Concise C7	Present
2	Ruptured intervertebral disk C6	220	Concise C6	Present
3	Ruptured intervertebral disk C6	120	Uncertain O4 D2	Present unilaterally
4	Extradural endothelioma D10	30	Concise D10	Present
5	Meningioma	100	Uncertain D8 D10	Questionable
6	Herniated disk C4	45	Uncertain O4 O6	Absent

TABLE 2—Meningeal Adhesions

No	Pathologic Diagnosis	Protein Content, Mg per 100 Cc	Sensory Level	Sacral Anesthesia
17	Adhesive arachnoiditis, varicosities and atrophy of the spinal cord	40	Uncertain	Present
18	Syphilitic pachymeningitis	30	Uncertain	Present
19	Arachnoid adhesions and atrophy of the cord	55	Uncertain	Present unilaterally
20	Adhesive arachnoiditis	100	Concise C5	Present

TABLE 3—Normal Appearance of Cord or "Intrinsic Cord Disease"

No	Pathologic Diagnosis	Protein Content, Mg per 100 Cc	Sensory Level	Sacral Anesthesia
7	Normal cord	+	Concise D12	Present
8	Normal cord	40	None (uncertain motor level)	Absent
9	Normal cord	55	Uncertain D8	Present
10	Normal cord	40	Uncertain C8 D1	Absent
11	Atrophy of cord	25	Uncertain C8	
12	Hematomyelia	65	Concise D10	Absent
13	Myelodysplasia	60	Uncertain C8	Absent
14	Normal cord	40	Concise L2	Present
15	Acute myelitis	70	Concise D8	Present
16	Normal cord	60	Concise C8	Present

tion of the spinal cord, which sometimes produce a level lesion but cannot be expected to improve through surgical means, are not being considered.

In the neurologic service at Bellevue Hospital (Cornell Division) in New York during a thirteen year period, 1930 to 1942 inclusive, 20 patients suspected to have a compressing lesion of the spinal cord above the second lumbar vertebra were operated on in the presence of a perfectly normal Queckenstedt sign. The suspicion of the presence of a space occupying lesion was not strong with regard to some of these patients, but, since there was a doubt, surgical procedures were undertaken.

Of the 20 patients with an "open" spinal fluid system, 10 showed some pathologic process intruding on the spinal cord for which surgical intervention bore hope of improvement. Of these 10, 6 had a definite space occupying localized compressing lesion, such as

patient of this type, often referred to as having "intrinsic cord disease," is known to display, in some mysterious fashion, considerable improvement after laminectomy,

TABLE 4—Protein Content of Spinal Fluid

	Cases in Which Content Was Normal to 45 Mg per 100 Cc	Cases in Which Content Was Elevated		
		Slightly Elevated 55-65 Mg per 100 Cc	Moderately Elevated 70-95 Mg per 100 Cc	Greatly Elevated 100-220 Mg per 100 Cc
Localized compressing lesion	2			4
Normal appearance of cord or "intrinsic cord disease"	6	3	2	
Arachnoiditis	2	1		1

despite the failure to find gross pathologic abnormality. Relationship of such a remission to the surgical procedure is certainly not proved but has been suggested.

Sachs and Glaser<sup>5</sup> reported occasional improvement after exploratory laminectomy on patients showing no pathologic changes ordinarily considered to be improved by the surgeon. They found that 8 of 33 patients of this type showed clinical recovery.

An attempt was made to correlate the operative findings with some of the more commonly emphasized physical and laboratory signs, namely the protein content of the spinal fluid, the presence or the absence of sacral anesthesia, and the sharpness of definition of the sensory level.

With regard to the values for protein, our study revealed that of the 6 cord compressing lesions 4 had produced a very high protein content in the spinal fluid and that 2, an extradural neoplasm and a herniated disk, were accompanied by normal protein values. As to the 4 cases showing meningeal adhesions, the protein content was within normal limits in 2, slightly elevated in 1 and definitely increased in 1. Of the 10 patients with an apparently normal cord or with intrinsic or other nonoperable disease of the cord 2 had moderately elevated and 3 slightly elevated protein values, and the

TABLE 5—Sacral Anesthesia

	Cases in Which Anesthesia Was		
	Present	Absent	Questionable
Localized compressing lesion	4	1	1
Normal appearance of cord or intrinsic cord disease	5	4	1 (unreported)
Arachnoiditis	4	0	0

TABLE 6—Definition of the Level

		Cases in Which Level Was	
		Concise	Uncertain
Localized compressing lesion		3	3
Normal appearance of cord or intrinsic cord disease		5	5
Arachnoiditis		1	3

remainder had values within normal limits. Although realizing the limitations of so small a series, we noted (table 4) that only the operable lesions in this group produced the very high protein levels.

With regard to the other correlations attempted, no such clearly defined trends are apparent. Sacral "saddle" anesthesia (table 5) was present with sufficient frequency in every one of the categories to be of little significance in the differential diagnosis. Again the cases were too few to support any definite conclusions. Similarly with the preciseness of the sensory level (table 6) each group had an equal distribution of patients with concise and patients with uncertain levels.

#### CONCLUSION

It is felt that this summation indicates the advisability of surgical exploration in a patient suspected of having a "level lesion" of the spinal cord despite the absence of spinal fluid block.

It is also seen that a high protein content of the spinal fluid (above 100 mg per hundred cubic centimeters) in such a patient is strongly suggestive of a localized compressing lesion, whereas the presence or the absence of sacral "saddle" anesthesia and the preciseness or the vagueness of the sensory level may not be of great significance in the diagnosis.

## 2-ANILINOETHANOL—AN INDUSTRIAL HAZARD

### PRODUCTION OF METHEMOGLOBINEMIA

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That aniline derivatives produce methemoglobinemia has been shown repeatedly by many investigators. The mechanism of this reaction has been reviewed by Bernheim.<sup>1</sup> One molecule of aniline combines with two of hemoglobin to give two molecules of methemoglobin and one of p-hydroxyaniline. To our knowledge it has not been shown that 2-anilinoethanol causes formation of methemoglobin but from analogy this might be expected to occur in the course of its metabolism in the body. That such is the case was suspected when 2 men in a commercial plant developed cyanosis while using this compound under the name "phenyl ethanolamine." No immediate means of testing the blood for methemoglobin was available in the local hospital, so that the etiologic agent of the cyanosis could not be definitely established. Both men rapidly recovered.

#### REPORT OF CASES

CASE 1—S. R., a Lithuanian aged 52, began work at 7 a. m. on Nov. 27, 1942 washing bearings with "mineral seal oil" containing 0.5 per cent "phenyl ethanolamine." He had been working for six years at the same task using the mineral seal oil, but on this day a sample admixed with 2-anilinoethanol was employed for the first time. At 2 p. m. a fellow worker noted that there was a bluish discoloration of the patient's lips and of the lobes of his ears. He continued at work until 4 p. m., at which time he had a mild occipital headache and a "feeling" that he was "taking a cold." He took two compound cathartic pills and continued at work until 5:30 p. m., at which time he quit work and went to see a physician. Although not acutely ill, he was sent to a hospital because of the cyanosis. He was put to bed and oxygen administered. The cyanosis progressed until about 11 p. m., then gradually subsided, and had entirely disappeared twenty-four hours after admission.

Physical examination gave essentially negative results except for the profound cyanosis involving both skin and mucous membranes. The blood was a deep brownish blue, and the urine was dark. Routine studies revealed no abnormalities of the urine or the blood. Recovery was rapid and complete.

CASE 2—M. C. Q., a white married man aged 53, began working at 12 noon on Nov. 27, 1942 with the same solution as described in the preceding case. At 6 p. m. a fellow worker noted that the patient's lips, nose and ears were blue. The patient was asymptomatic except for slight dizziness and mild pains in the muscles of his legs. When he reported to the first aid nurse at 8:45 p. m. it was necessary for him to sit upright to breathe. He arrived at the hospital at 10 p. m. at which time oxygen was administered. His cyanosis progressed until 1 a. m. and then receded steadily until it was entirely gone twenty-four hours after he entered the hospital. Physical examination revealed no abnormalities other than cyanosis and dyspnea. The urine was normal. The blood was dark brownish blue but otherwise showed no abnormalities.

From the Laboratories of Pharmacology and Toxicology, Yale University School of Medicine.

Dr. Albert S. Gray and Dr. Crit. Pharris of the Connecticut State Department of Health Bureau of Industrial Hygiene assisted in obtaining the chemicals studied. Technical assistance was given by Miss Ruth Jaffe and Mr. Vincent Tucker. The manufacturer cooperated by supplying immediately samples of the commercial material and by preparing specially purified material for further study.

<sup>1</sup> Bernheim, Frederick. The Interaction of Drugs and Cell Catalysts. Minneapolis: Burgess Publishing Company, 1942.

## DESCRIPTION OF THE INDUSTRIAL PROCEDURE INVOLVED

The manufacturing operation in which the 2 men were engaged was the washing of assembled roller bearings by holding them in a stream of mineral seal oil containing 0.5 per cent by volume of 2-anilinoethanol, called "phenyl ethanolamine." This solution was being

## Observations on Acute Toxicity

Toxicity of 2 Anilinoethanol Administered Undiluted to Normal Dogs					
Dog	Dose, Mg per Kg	Route of Administration	Recovered	Died	Time of Death
1	108	Intravenous	+		
2, 3, 4	110	Intravenous	+		
5	140	Intravenous	+		
6	165	Intravenous		+	12 hr
7	176	Intravenous	+		
8	220	Intravenous		+	1 hr
9	237	Intravenous		+	6 min
10	63	Oral	+		
11	440	Oral	+		
12, 13	110	Subcutaneous	+		
14	220	Subcutaneous	+		
15	220	Subcutaneous		+	3 days

Toxicity of 2 Anilinoethanol Administered Intraperitoneally to White Mice				
Number of Mice	Dose	Route of Administration	Recovered	Died
5	66	Intraperitoneal	5	0
5	176	Intraperitoneal	4	1
15	220	Intraperitoneal	10	5
20	275	Intraperitoneal	11	9
15	330	Intraperitoneal	2	13
25	385	Intraperitoneal	6	19
10	440	Intraperitoneal	1	9

Toxicity of 2 Anilinoethanol Administered to Rabbits				
Number of Rabbits	Dose	Route of Administration	Recovered	Died
1	16	Intravenous	1	
1	22	Intravenous	1	
1	33	Intravenous	1	
1	44	Intravenous		1
2	55	Intravenous		1
1	82	Intravenous	1	1
1	83	Intravenous		1

sprayed through nozzles at a pressure of 80 pounds per square inch. The washing bath was so constructed that the spray stream was directed away from the operator and against the back wall and down into the distribution system. There was good ventilation of the bath to remove spray mists, in fact, it was impossible to see any mist around the booth while it was being used. This cleaning operation had been carried out for a number of years with mineral seal oil as the basic ingredient of the spray. No trouble had been experienced until 2-anilinoethanol was added. The casualties occurred on the first day that the cleaning mixture was altered. The relative importance of cutaneous and pulmonary ports of entry requires further study.

## TOXICOLOGIC INVESTIGATION

Two samples of 2-anilinoethanol were supplied to us for toxicologic study: one a technical grade of 2-anilinoethanol, the same that was used by the industrial workers, and the other a pure sample kindly prepared by the manufacturer.

Normal adult dogs fed on commercial chow were subjected to 2-anilinoethanol by various routes. Methemoglobin was determined by the method of Evelyn and Malloy<sup>2</sup> with a Klett-Summerson photoelectric colorimeter. Acute toxicity experiments were carried out on 15 dogs, 8 rabbits and 95 mice, in addition to chronic toxicity experiments on 11 dogs.

Pathologic studies, both gross and microscopic, were made on those subjected to chronic poisoning.

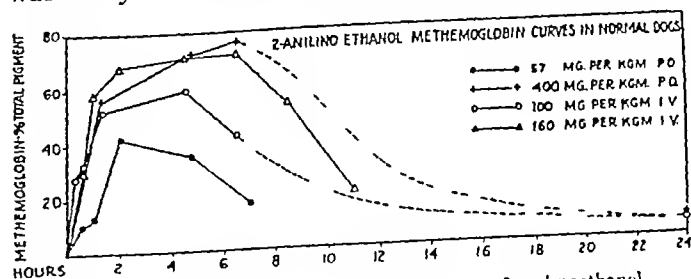
2 Evelyn, K. A., and Malloy, H. T. Microdetermination of Oxyhemoglobin, Methemoglobin and Sulfhemoglobin in a Single Sample of Blood, *J. Biol. Chem.* 126: 665 (Sept.) 1938.

**Studies of Toxicity**—The 2-anilinoethanol was dissolved in a dilute solution of ethyl alcohol for injection into mice. The undiluted drug was used in dogs and rabbits. The rate of intravenous administration was slow because rapid injection was known to cause respiratory arrest and immediate death. Emesis uniformly followed the administration of the larger doses to dogs within the first ten minutes. No signs of immediate toxicity were noted in rabbits and mice except for transitory stupor and ataxia during the first three to ten minutes. Usually if death was not immediate it was delayed for six to twelve hours.

(a) **Effect on Blood Cells**—Studies were made of the blood of 4 dogs after administration of 2-anilinoethanol. Two dogs treated repeatedly at one to two day intervals with 110 mg per kilogram injected subcutaneously showed no change of the granulocytes or mononuclear white cells, either in numbers or in structure. In one of these animals the hemoglobin dropped from 14 Gm to 9 Gm per hundred cubic centimeters of blood in twenty-one days and in the other animal from 12 Gm to 6.5 Gm per hundred cubic centimeters in a ten day period. By the twenty-seventh day the hemoglobin of the first dog had returned to 10.5 Gm and that of the second to 11 Gm per hundred cubic centimeters on the twenty-fourth day.

In a dog given 220 mg per kilogram subcutaneously at frequent intervals (one to two days) severe anemia developed (7.5 Gm hemoglobin per hundred cubic centimeters of blood) by the seventeenth day. The fourth animal, which died four days after treatment, showed a fall in hemoglobin from 11 to 8 Gm per hundred cubic centimeters and of the erythrocyte count from 4.8 to 2.5 million per cubic millimeter shortly before death. The red cell count fell uniformly in all 4 dogs, but only the last of these animals showed a drop corresponding to the low hemoglobin. There was a slight increase in the number of nucleated red cells and in the polychromatophil red cells. No increase in reticulocytes could be demonstrated on the fifteenth day.

(b) **Production of Methemoglobin**—Four curves are shown in the accompanying chart to illustrate the concentration of methemoglobin in the blood at various times following the oral or the intravenous administration of the crude 2-anilinoethanol to dogs. By either route of administration the peak of methemoglobin was reached in from two to four hours. The rise, however, was delayed somewhat when the oral route was used.



Methemoglobin curves of normal dogs given 2-anilinoethanol

In 2 other animals when 2 cc of drug was spread over an area of depilated skin 15 by 15 cm methemoglobin rose only to 6 and 12 per cent respectively.

A 31 Kg dog was allowed to breathe the atmosphere from a 500 cc beaker held over its mouth and nose. Into this beaker was sprayed 2 cc of 2-anilinoethanol in 10 cc of ethyl ether. Cardiac blood samples revealed methemoglobin concentrations of 20.8 and 48 per cent at intervals of one hour fifteen minutes and four hours forty-five minutes respectively.

In the rabbits and the mice negligible amounts of methemoglobin were formed when 2-aminoethanol was injected intravenously. We are informed, however, by the manufacturer that recent observations indicate that rats are susceptible.

Blood from treated dogs when examined by a hand spectroscope showed spectral bands corresponding with those of methemoglobin prepared *in vitro* by adding potassium ferricyanide to normal blood.

The experiments described were conducted with the commercial product as marketed. Methemoglobin curves similar to those shown in the chart, however, were obtained when purified 2-aminoethanol was employed. It is evident, therefore, that this compound is the agent producing the methemoglobinemia, and not a contaminant present in the crude material.

**Chemical Tests**—Alles<sup>3</sup> has discussed the formulas of two phenylethanolamines, i. e.,  $\alpha$ -phenyl,  $\beta$ -aminoethanol ( $C_6H_5CHOHCH_2NH_2$ ) and  $\beta$ -phenyl,  $\beta$ -aminoethanol ( $CH_2OHCH(C_6H_5)HNH_2$ ). Either of these compounds is a primary amine and should react with nitrous acid to yield elementary gaseous nitrogen. When this test was applied to the substance under discussion, however, no gas was evolved. Furthermore, a reddish oil was formed, insoluble in water at  $pH$  2.5 under conditions which readily dissolved the original so-called phenyl ethanolamine. In short this substance did not behave like a primary amine. Furthermore, on boiling with chloroform and potassium hydroxide the compound gave no disagreeable isonitrile odor. The most likely interpretation, therefore, is that the substance<sup>4</sup> is a secondary amine, i. e., 2-aminoethanol ( $C_6H_5NHCH_2CH_2OH$ ). It is a colorless liquid with a density of  $1.114\frac{1}{4}$  Gm per cubic centimeter boiling at  $286^\circ C$ . It is only slightly soluble in water but is soluble in alcohol. A comparison of the properties of the substance under discussion showed good agreement with the anticipated findings.

#### COMMENT

It is hoped that the reporting of these cases will call the attention of physicians in industrial practice to the necessity of critically investigating the structure and properties of new compounds. The name phenyl ethanolamine would naturally identify the compound in question as an epinephrine-like substance<sup>3</sup> and therefore is quite misleading. If the compound had been named, however, as an aniline derivative or if the chemical formula had been placed on the label, an error of this nature should not have occurred.

On discussing the problem with Dr G. A. Alles, he kindly consented to our quoting the following:

It is unfortunate that the term phenyl ethanolamine has come to be applied commercially to ethanolaniline or 2-aminoethanol. The term ethanolaniline is far more suitable to indicate the special chemical properties of the compound among types of amino-alcohols now manufactured and used industrially. From the standpoint of its toxicology also the name ethanolaniline would readily bring to the minds of those with elementary pharmacological knowledge its potential toxicities in industrial use. Certainly if the nomenclature of phenyl ethanolamine be persisted in the compound should always be designated as *N*-phenyl ethanolamine to distinguish this compound from the earlier described and used  $\alpha$ - and  $\beta$ -phenyl ethanolamines.

This problem of nomenclature arises from the long established custom of giving greater importance to oxygen than nitrogen in the systematic naming of organic compounds. This

emphasis is particularly unfortunate in the group under consideration, because the amino character of these compounds so completely dominates their properties for industrial use and determines their characteristic physiological activities.

#### CONCLUSIONS

An oil mixture containing 2-aminoethanol (improperly named "phenyl ethanolamine") caused cyanosis in 2 factory employees using it. This substance likewise produced cyanosis in dogs but not in rabbits and mice. As established in dogs, the presence of methemoglobinemia is the cause of the cyanosis.

Because this problem of toxicity is likely to arise repeatedly as new industrial uses are found for the many related chemical substances which will be available, this example has been cited.

The hazard of such intoxication of human beings might be mitigated if special care was taken that similar substances are named as aniline derivatives. At least a cautionary label should be applied to warn industrial safety committees of the danger.

333 Cedar Street

### Clinical Notes, Suggestions and New Instruments

#### FAILURE OF SULFAGUANIDINE THERAPY IN THE CONTROL OF AN INSTITUTIONAL TYPHOID CARRIER

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#### REASON FOR ATTEMPTING CHEMOTHERAPEUTIC CONTROL

In spite of routine typhoid inoculation of all patients and personnel, 4 cases of typhoid occurred in the Delaware State Hospital during the period 1934-1942. This is a hospital for nervous and mental diseases, its annual average census ranging from 1,180 to 1,200 patients. The entire population of the hospital had been immunized against typhoid in 1933 when 4 cases occurred in Ward B East, routine admission immunization being instituted at the same time. All immunizations were the usual three subcutaneous injections of a standard triple typhoid vaccine.

In 1933 typhoid developed in a graduate nurse on duty in Ward B East. In 1937 a male patient contracted the disease. He did not live in Ward B East, which is a women's ward, but did help in the hospital laundry serving that ward. In 1938 a female attendant in Ward B East came down with typhoid, and on Oct. 2, 1942 a woman patient was found to have the disease. She had been admitted to the hospital in March 1941, at which time she received the usual admission immunization against typhoid. She had been a patient in Ward B East since April 1942. Being feeble-minded in a state of advanced mental deterioration, extremely confused and untidy, she never left the ward for social activities. For six months prior to the onset of her typhoid she had no visitors and had not been exposed to any outside contacts whatever. She died on October 7, autopsy revealing Pick's disease as well as typhoid.

It seemed probable that the source of infection of this patient would be found in the ward itself. A systematic search for a carrier was therefore instituted by one of us (T. P. B.) beginning with those persons—both patients and staff—who were known to have had some connection with the ward at each of the various times when typhoid infection occurred. Eberthella

<sup>3</sup> Alles, C. A. Comparative Action of Phenyl Ethanolamine. *J. Pharmacol. & Exper. Therap.* 32: 121 (June) 1927.

<sup>4</sup> Described as compound 3599 in the Handbook of Chemistry and Physics, ed. 25. Chemical Rubber Publishing Company, 1941-1942, p. 758.

typhi was reported from 3 successive specimens of feces a week apart submitted by E. A., a patient, while specimens of feces and urine from the remaining 74 patients and staff in the ward were all negative. E. A., a white woman aged 74, schizophrenic, was 1 of 2 surviving patients who had typhoid in 1933. Release specimens at that time were negative. During the ten year period since then she had been confined continuously to Ward B East, using the common facilities of the ward. However, she had never helped with food handling, she was very clean and she was asocially inclined staying away from other patients and never mingling with the untidy.

Immediately on discovery that she was a carrier, she was isolated in a separate room in the ward under all sanitary precautions, and all the patients and staff of the ward were reimmunized. However, isolation facilities were not really satisfactory, and the carrier's mental condition made it impossible to expect cooperation from her at any time. As for the other patients in this ward, the majority were mentally confused and untidy as to their habits. Fecal contamination was common with many of them. It was essential to give them as much protection from the carrier as possible. The carrier's physical condition made surgical attack on her infection impracticable. Under these circumstances it seemed wise to try sulfonamide treatment in an attempt to cure her.

#### TREATMENT WITH SULFAGUANIDINE

Although the sulfonamides are reported to have no favorable effect on the disease typhoid and their use is ordinarily confined to treatment of spreading infections, favorable results with sulfaguanidine have been reported in the treatment of dysentery carriers and in blood stream infections with gram-negative intestinal organisms, while Hoagland<sup>1</sup> reports success in treatment of 2 out of 3 typhoid carriers with sulfaguanidine. Accordingly it was decided by one of us (F. A. F.) to institute sulfaguanidine therapy.

For some years the carrier had shown a rather constant although mild albuminuria, and granular casts had been found on numerous occasions. Urine of specific gravity ranging from 1.003 to 1.024 was obtained on a dilution test and a specific gravity of 1.030 on concentration test. On a phenolsulfonphthalein test 12 per cent of the dye was recovered at 70 minutes after injection and 35 per cent 130 minutes after injection. In view of the fact that the carrier had had some kidney impairment, it seemed wise to start with a small initial dose. Treatment was begun on Dec. 21, 1942 with 6 Gm. a day of sulfaguanidine by mouth. The dosage was increased to 12 Gm. a day on the twelfth day, January 1, and to 18 Gm. a day on the fifteenth day, January 5, this last dose being nearly the maximum of 20 Gm. a day advocated by Hoagland in cases in which smaller doses are ineffectual. There had been increasing loss of appetite during the administration of sulfaguanidine, and the patient had seemed to grow more apathetic but had not been seriously incapacitated. When the dose was increased to 18 Gm. a day, she became weak, mildly cyanotic, began to vomit and refused all food. On January 7 and 8 she was given 1,000 cc. a day of saline solution with 5 per cent dextrose solution intravenously. Because of her schizophrenic mental state nothing could be learned as to subjective symptoms, but general malaise was obviously present to a pronounced degree. The temperature, which had been normal throughout the treatment period, rose on January 7 to 99 F. and on January 8 to 102 F. Treatment with sulfaguanidine was discontinued on January 8. Two days afterward the temperature fell to a normal level. Complete blood counts during the course of treatment were all within normal limits. Treatment was maintained at the 18 Gm. level for a total of four days. The carrier thus received a total of 174 Gm. of sulfaguanidine. Her carrier condition at no time showed even the slightest effect from treatment. Specimens of feces were found positive on Dec. 12 and 28, 1942, Jan. 9 and 12, and April 20, 1943. Within a few days after sulfaguanidine treatment was discontinued the patient recovered her usual health. No delayed reaction to the drug had appeared by June 29, 1943.

<sup>1</sup> Hoagland, Robert J. The Typhoid Carrier State Treated with Sulfaguanidine, J. A. M. A. 120:1211 (Dec. 12) 1942, correction, 121:365 (Jan. 30) 1943.

#### SUMMARY

A chronic typhoid carrier discovered in a mental hospital continued to discharge typhoid organisms in her feces while receiving sulfaguanidine by mouth at the rate of 6 to 18 Gm. a day. She was still a carrier after eighteen days of treatment in which she received a total of 174 Gm. of sulfaguanidine.

#### SUCCESSFUL SURGICAL TREATMENT OF MULTIPLE ATRESIAS (APLASIAS) OF THE SMALL INTESTINE IN A PREMATURE INFANT

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AND LIEUTENANT WILLIAM S. WALDRON, M. C., A. U. S.

Remarkable progress has been observed in the treatment of intestinal atresias during the past fifteen years. Prior to 1927 only 4 cases of atresia of the intestine had been successfully treated by surgery.<sup>1</sup> When Webb and Wangenstein<sup>2</sup> in 1931 reviewed some 500 reported cases of intestinal atresia, only 9 survivals could be found. Ten years later Cohen<sup>3</sup> estimated that another 150 cases had been reported but that there were now over 50 instances of successful surgical treatment. It is difficult to estimate the operative survival following early and adequate surgical treatment as most cases have been reported individually or, at best, in small groups, owing to the comparative rarity of this condition. Ladd,<sup>4</sup> however, has recently published the results of 49 cases of atresia of the small intestine treated in his clinic. In this group there were 7 survivals (14 per cent).

Multiple intestinal atresias are infrequent in their occurrence. Davis and Poynter<sup>5</sup> found 67 instances of multiple lesions in 392 cases of intestinal atresia collected from the literature, an incidence of 15 per cent. In Ladd's<sup>4</sup> series there were 3 cases, or 5 per cent of the total group. Glover<sup>6</sup> in 1942 estimated there had been fewer than 100 cases of multiple intestinal atresia reported. Very few of these cases have been treated surgically. To the best of our knowledge there have been no survivals. It is our purpose in this paper to report what we believe to be the first successful surgical treatment of a case of multiple atresias of the small intestine.

#### REPORT OF CASE

M. G., a white boy aged 36 hours, admitted to the Pediatric Service on Aug. 28, 1942, had been born at a Bavonne (N. J.) hospital and referred to us with a diagnosis of congenital intestinal obstruction.

The pregnancy had been entirely normal until labor started one month prematurely. The latter was of short duration and followed by an uneventful delivery. Breathing started spontaneously and there was no evidence of birth injury. The weight at birth was 4 pounds 8 ounces (2,041 Gm.). He had vomited everything fed by mouth up to the time of admission. Absence of stools since birth had been noted.

The infant was well developed and nourished, considering his prematurity. The skin was decidedly jaundiced but possessed good turgor. The scleras were icteric. The abdomen was soft and without palpable masses. Borborygmi were not audible and peristaltic waves were not seen. The remainder of the physical examination was essentially negative. The

From the Pediatric and Surgical Services, St. Luke's Hospital. Read in part before the Section on Pediatrics of the New York Academy of Medicine, May 13, 1943.

- <sup>1</sup> Lockens, P. Ein operativegeheiltes Fall von kongenitaler Duodenalstenose. Zentralbl. f. Chir. 38:532 (1911).
- <sup>2</sup> Webb, C. H., and Wangenstein, O. H. A Case of Congenital Atresia of the Duodenum Treated Successfully by Operation. Brit. M. J. 1:644, 1916.
- <sup>3</sup> Richter, H. M. Surgery of the Gastrointestinal Tract in Children. In Holt, I. A. Pediatrics, Philadelphia, W. B. Saunders Company, 1924, vol. 3, p. 512.
- <sup>4</sup> Bolling, R. W. Complete Congenital Obstruction of the Duodenum. Duodenoduodenostomy at Nine Days of Age. Ann. Surg. 83:543 (April) 1926.
- <sup>5</sup> Webb, C. H., and Wangenstein, O. H. Congenital Intestinal Atresia. Am. J. Dis. Child. 41:262 (Feb.) 1931.
- <sup>6</sup> Cohen, Philip. Congenital Intestinal Obstruction. Am. J. Dis. Child. 61:135 (Jan.) 1941.
- <sup>7</sup> Ladd, W. E., and Gross, R. E. Abdominal Surgery of Infancy and Childhood. Philadelphia, W. B. Saunders Company, 1941, p. 25.
- <sup>8</sup> Davis, D. L., and Poynter, C. W. Congenital Occlusions of the Intestines. Surg. Gynec. & Obst. 34:35 (Jan.) 1922.
- <sup>9</sup> Glover, D. M., Smith, Simmons, and Eitzen, Oliver. Multiple Atresia of the Small Intestine. Ann. Surg. 116:337 (Sept.) 1942.



infant weighed 4 pounds 4 ounces (1,928 Gm) and measured 18 inches (46 cm) in length

Nonprojectile vomiting occurred shortly after the infant was fed some dextrose solution. The vomitus was bile stained and without fecal odor. Fluoroscopic and roentgenographic examination revealed moderate gaseous distention of the stomach and duodenum, which ended abruptly in the region of the duodenojejunal flexure (fig 1). The remainder of the alimentary tract was entirely devoid of gas. Barium was not used in these studies. Liberal amounts of parenteral fluids were administered during the next twenty-four hours. Vitamin K was injected intramuscularly. The stomach was lavaged clear immediately preceding the operative procedure.

The operation was performed by one of us (F. S. W.) on August 29. With the patient under open drop ether anesthesia, a 6 cm. upper right rectus incision was made. A dilated loop of small intestine bulged into the wound after the peritoneal cavity was opened. Further examination revealed the stomach, duodenum and proximal jejunum to be dilated with some thickening of the intestinal wall in these regions (fig 2). Approximately 10 cm below the ligament of Treitz the jejunum ended blindly. The next portion of bowel was an isolated loop approximately 4 cm in length. This was followed by a section of bowel 17 cm in length, which also ended blindly at either end. Just proximal to its distal end there was a bulging caused by inspissated meconium (fig 3). On the antimesenteric side of the intestine in this area there was pronounced thinning of its musculature, and a small point of perforation was visualized. Both these blind loops of intestine were supported by individual mesenteries. They were completely separated from each other and from the other portions of the bowel. At the proximal end of the remaining loops of small intestine there were two areas of stenosis. Distal to these stenotic areas no further evidence of

atresia or stenosis was found in the small or large bowel. The intestine in these regions was completely collapsed but appeared to be patent.



Fig 1—Plain flat film of the abdomen. Infant was held in an upside down position. The two smaller shadows on the left side of the abdomen are due to air present in the stomach. The larger curved shadow in the center of the abdomen represents air in the small intestine. The smaller end of this shadow is just above the point of obstruction. Note the absence of air in the remainder of the film.

The small, uncomplicated, isolated loop of jejunum was left undisturbed. The 17 cm loop of jejunum containing the perforation was resected (fig 3). Liquid petrolatum was then injected into the lumen of the uninvolved distal small intestine and seen to pass readily through the remaining portions of the small bowel. This was done to dilate the distal intestine preparatory to making the anastomosis. While this procedure was being carried out, the mesentery of the proximal portion of the distal small intestine was torn loose for a distance of 3 cm. This necessitated resection of this portion of the small intestine which procedure was carried out just below the stenotic areas. The distal stump was cauterized with the actual cautery, inverted and closed with a number 00 chromic catgut suture passed on an atraumatic needle. Bleeding vessels in the mesentery were tied with number 00000 chromic catgut

sutures. This end of the small bowel was then sutured side to side with the upper dilated jejunum by continuous sutures of number 00 chromic catgut passed on atraumatic needles. The upper and lower loops were then opened. The anastomosis was made by a continuous stitch through the entire intestinal wall posteriorly. The suture was locked at either angle and

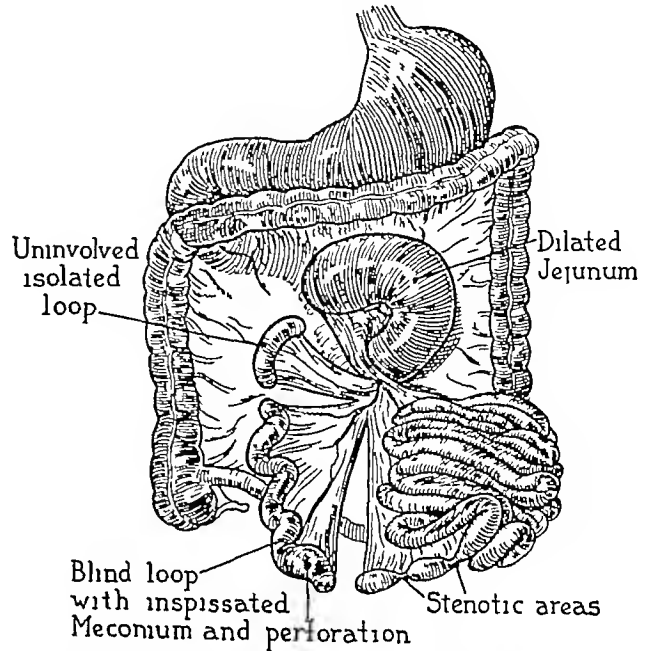


Fig 2—Diagrammatic sketch of the abdominal findings at the time of operation.

brought anteriorly as a Connell stitch. A number 00 chromic catgut suture on an atraumatic needle was used for this procedure. The anastomosis was reinforced anteriorly with a number 00000 chromic catgut suture. The peritoneum was closed with a continuous suture of number 000 chromic catgut.

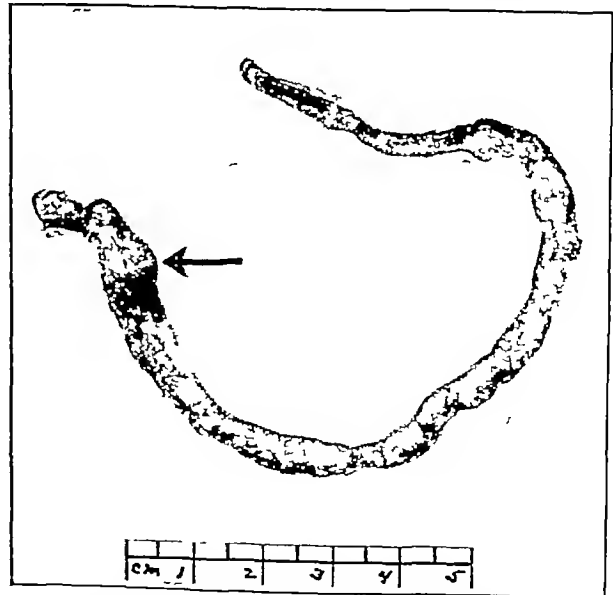


Fig 3—The 17 centimeter isolated loop of jejunum which was resected because of perforation. Arrow indicates point of perforation.

Closure of the anterior rectus sheath was carried out in a similar manner. Retention sutures of number 1 silk were placed through the anterior rectus sheath. A continuous number 6 silk suture was used for the skin closure. The retention sutures were then tied. The duration of the operative

procedure was two hours. The patient was returned to the nursery in good condition.

The infant was placed immediately in a heated bed. Nothing was given by mouth during the first three postoperative days. Parenteral fluids were administered in liberal amounts. Small transfusions of plasma or whole blood were given almost daily. Vitamins C and K were injected intramuscularly. The stomach was lavaged at frequent intervals. The patient's general

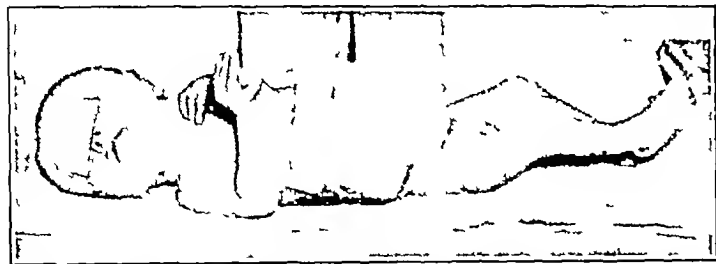


Fig. 4—Appearance of the patient at the end of the third postoperative week.

condition was excellent. The turgor of the skin was good and the jaundice diminished in intensity. Slight regurgitation occurred occasionally, but there was no frank vomiting. The abdomen was soft to palpation.

At the end of the third postoperative day, small amounts of 5 per cent dextrose in saline solution were given by gavage. A small amount of brown mucoid material was passed by rectum approximately ninety hours after the operation. Two hours later a small amount of yellowish-green mucoid material was expelled rectally, indicating patency of the anastomosis. The infant weighed 4 pounds 7 ounces (2,013 Gm) at this time.

On the fifth postoperative day the infant was started on gavage feedings of sterile water every three hours, followed the next hour by a formula composed of breast milk and barley water. The amount of the formula given was increased every four feedings. Two days later the infant developed a moderate generalized edema. The skin and retention sutures had cut through and were loose. The edges of the wound had separated, but the anterior rectus sheath remained firm. The wound was closed by means of an adhesive dressing. The infant's weight was 4 pounds 13 ounces (2,183 Gm). The amounts of the parenteral fluids were reduced until the edema had disappeared. Bottle feedings were started and readily taken on the eighth postoperative day. The stools had increased to six to seven a day, had become watery and contained mucus as compared to the yellow pasty breast milk stools which were present during the first few days of these feedings. The diarrhea continued even after the breast milk had been lactified. Parenteral fluids were increased again on the twelfth postoperative day when evidence of dehydration reappeared.

A protein milk formula was started on the thirteenth postoperative day. During the first five days of this feeding the infant lost 7 ounces (198 Gm) in weight. It was observed at this time that the white blood cell count had increased up to 37,000 from its former range of 14,000-17,000. The stools had decreased in number and were of firmer consistency but chalky white. Urine specimens gave positive tests for bile. The jaundice, which had practically disappeared, increased in intensity. The infant appeared much weaker and required continuous external heat to maintain a normal body temperature. His breathing became rapid and shallow, and he was occasionally cyanotic. At one time he showed a definite carpopedal spasm. Sulfadiazine was started with the idea that this setback might have been of a septic nature. The white blood cell count fell promptly to its former levels following the administration of this drug. Calcium gluconate was injected intramuscularly and a preparation of crystalline vitamin D<sub>2</sub> was added to the formula. Bile salts and vitamin K were administered because of the biliary obstruction. Most of the feedings had to be given by gavage during this period.

By the end of the third postoperative week the infant had made considerable improvement (fig. 4). Whole powdered milk was gradually substituted in the formula for corresponding

amounts of the protein milk. The infant became stronger and was able to take feedings by bottle once more. The stools were better digested and numbered from three to five a day. They appeared to contain bile, but a positive laboratory test for this substance could not be obtained. The jaundice had decreased somewhat in intensity, but bile was still detectable in the urine. The bile salts, calcium gluconate, sulfadiazine and vitamin K were discontinued. There was a steady gain in weight to 5 pounds 6 ounces (2,438 Gm) on the fortieth postoperative day.

During the next one and a half weeks there was an increase in the number of stools to six to seven a day. They became loose and were fatty in consistency. Parenteral fluids were given intensively but failed to stop a weight loss to 4 pounds 15 ounces (2,240 Gm). A protein milk formula was again instituted. This, along with the administration of bile salts, brought about control of the diarrhea.

From this point the patient progressed very satisfactorily. Whole powdered milk eventually replaced protein milk completely in the formula. Lactose was gradually added to the formula and was tolerated well. Cereal was started one week before discharge from the hospital. Bile salts were discontinued after they had been given for a period of four weeks. Jaundice gradually decreased and had disappeared entirely by the end of the second postoperative month. The stools became small, were normal in consistency and contained bile. However, they numbered four to five daily until the last two hospital weeks, when they decreased to two a day. The last positive test for bile in the urine occurred on the sixty-third postoperative day. There was a steady gain in weight up to 7 pounds 4 ounces (3,288 Gm) at the time of his discharge on



Fig. 5—Appearance of the patient at the age of 10 months.

the one hundred and ninth hospital day. He had developed a diastasis recti at the operative site, which was controlled by an abdominal binder. Otherwise the discharge examination was essentially normal.

The patient was seen again at the age of 6½ months. At this time he was in excellent health and weighed 15¼ pounds (6,917 Gm). He had had varicella during the preceding month. There had been no evidence of dietary intolerance. No signs or symptoms referable to the gastrointestinal tract had

been observed. The remainder of the physical examination was negative except for the distasis recti. When seen on June 29, 1943 at the age of 10 months, the patient appeared in excellent health (figure 5). He had recently undergone an attack of rubella without difficulty. Examination was again negative except for the weakness of the abdominal wall due to the distasis recti. The feeding and developmental history was within normal limits. He now weighed 18 pounds (8.2 Kg) and measured 30½ inches (76 cm) in length.

## COMMENT

Since several reviews on intestinal atresia had appeared in the recent literature,<sup>7</sup> discussion will be limited to those factors believed important in the successful outcome of the present case.

The first essential in increasing the number of successfully treated cases of intestinal atresia rests in its early recognition clinically. While some of these infants have lived as long as three weeks without surgical treatment the average age at death is 6 days.<sup>8</sup> Therefore the obstetrician who is most likely to come in contact with these cases first, should be well acquainted with its early clinical manifestations. Persistent vomiting of all feedings from birth along with the absence of stools should always suggest the possibility of intestinal atresia. Other clinical findings vary with the location of the lesion and these are well discussed in the aforementioned reviews. The early recognition of congenital intestinal obstruction in the present case permitted us to operate while the infant was still in an excellent state of hydration and nutrition.

Röntgenology is of great aid in the diagnosis and localization of intestinal atresia. Adequate information may be obtained from a plain flat film of the abdomen.<sup>9</sup> Sufficient contrast material is provided by the large amounts of air swallowed by newborn infants. In the presence of intestinal atresia the swallowed air is unable to progress beyond the point of the obstruction. The dilated outline of the portion of the intestine above the atresia and the absence of gas in the distal bowel are usually clearly demarcated. The use of a barium contrast meal, in most instances is unnecessary. It has been stressed that such studies may be detrimental.<sup>10</sup> Barium can easily plug and obstruct the undilated portion of intestine beyond the atresia, once the anastomosis has been made. Another objection is that the inclusion of barium within the anastomosis would delay or even prevent its healing. This point needs emphasis, as cases in which barium studies have been done continue to appear in the literature and in our own personal experience.

The need for adequate maintenance of fluids and electrolytes in infant surgery has become well recognized in recent years. It has been rightly emphasized that operation should be delayed in the presence of dehydration until restoration of tissue fluids and electrolytes has been accomplished.<sup>11</sup> The recognition of this fact has materially influenced the operative successes in the newborn period. That infants in a state of good nutrition and hydration can withstand major surgical procedures of long duration is amply demonstrated in the present case. The administration of parenteral fluids postoperatively in the treatment of cases of atresia is especially important. Oral feedings are not given in the immediate postoperative period in order to permit healing of the anastomosis without enteric irritation. Thus the entire maintenance of tissue fluids and electrolytes is dependent on their parenteral administration.

Recent investigations<sup>12</sup> have revealed an elevated prothrombin clotting time in the newborn period particularly in premature infants even when clinical evidence of hemorrhagic disease is

lacking. Many studies have revealed the efficacy of vitamin K in the therapy of this bleeding tendency.<sup>12</sup> Patients undergoing any operative procedure in the neonatal period should receive adequate parenteral administration of vitamin K preoperatively and for a short period in the postoperative course as a routine procedure.

There are recorded instances in which an anastomosis has been performed for what, at operation appeared to be a single atresia to find, at necropsy, that multiple atretic lesions had been present.<sup>6</sup> At the time of the operation, therefore, it is essential to explore the entire intestinal tract completely. In some cases the extent of the abnormalities will preclude any operative attempt. However, the successful treatment of multiple lesions, illustrated in the present case, will be possible in certain instances.

There is general agreement at the present time that the operation of choice is a side to side anastomosis.<sup>4</sup> The small distal intestine precludes the use of an end to end anastomotic procedure. Except for a few cases, enterostomy has been invariably fatal. Ladd has stressed a minimal amount of surgery at the time of the primary operation. He advises leaving uncomplicated isolated loops intact. Their removal at a later date is recommended because of possible cyst formation. The presence of gangrenous or perforated intestine necessitates resection of the involved bowel. These principles were followed in the present case. The small uncomplicated blind loop of jejunum was left undisturbed while the larger isolated loop containing the perforation was resected. At the time of the present writing there has been no evidence of cyst formation in the blind loop still remaining in the abdomen.

Definite evidence of biliary obstruction appeared in our case during the third postoperative week. This persisted and did not completely clear until the end of the second postoperative month. Stetten<sup>13</sup> reported biliary obstruction occurring earlier and of shorter duration following a duodenojejunosomy for an atresia at the duodenojejunal junction. In his case there was also protracted vomiting postoperatively. There was temptation for further surgery in both these cases. That they were functional disturbances was proved by the subsequent clinical course in both instances. We therefore believe that secondary operations for apparent operative complications in the early postoperative period should be entered on with considerable hesitancy.

A severe diarrhea developed in our infant several days after starting a breast milk formula. Stetten<sup>14</sup> had a similar experience in his case. The diarrhea was promptly brought under control when a protein milk formula was instituted in both of these cases. This would seem to indicate that protein milk is preferable to breast milk as the postoperative feeding.

Our infant received twenty-five transfusions of either whole blood or plasma by vein during the first four postoperative weeks. These provided adequate nutrition during a period when the oral intake was insufficient. There is no question that these repeated transfusions played a large role in the successful outcome of the present complicated case.

## SUMMARY

Multiple atresias (aplasias) of the small intestine of a premature infant were given surgical treatment successfully. A small isolated loop of jejunum was left undisturbed. A larger blind loop of jejunum was resected. This loop contained a perforation caused by inspissated meconium. The proximal end of the distal small intestine, containing two areas of stenosis was resected because its mesentery was torn during the operative procedure. A side to side anastomosis was made between the distal intestinal stump and the proximal dilated jejunum. A prolonged period of biliary obstruction and two episodes of severe diarrhea complicated the postoperative course.

7 Wangenstein O H. Intestinal Obstruction. Springfield, Ill. Charles C Thomas Publisher 1942 p 261. Ladd and Gross.<sup>8</sup> Cohen.<sup>9</sup> Ladd W E, Donovan E J and Gross R E. Panel Discussion on Intestinal Obstruction in Infancy. *J Pediatr* 21: 264 (Aug) 1942. Webb and Wangenstein.<sup>10</sup> Cohen.<sup>11</sup> Ladd and Gross.<sup>12</sup> Montgomery A H. Diseases of the Small Intestine. Cecum, Peritoneum and Omentum in Brennemann Joseph. *Practice of Pediatrics*. Hagerstown, Md. W F Prior Company Inc. 1942 vol 3 p 8. Cohen.<sup>13</sup> Ladd and Gross.<sup>14</sup> Ladd, Donovan and Gross.<sup>15</sup> Ladd, Donovan and Gross.

11 Kato K and Poncher H G. The Prothrombin in the Blood of Newborn Mature and Immature Infants. *J A M A* 114: 749 (March) 1940.

12 Waddell W W Jr and Guerry D III. The Role of Vitamin K in the Etiology, Prevention and Treatment of Hemorrhage in the Newborn Infant. *J Pediatr* 15: 802 (Dec) 1939.

13 Stetten, DeW. Duodenojejunosomy for Congenital Intrinsic Total Atresia at the Duodenojejunal Junction. *Ann Surg* 111: 583 (April) 1940.

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION  
OF THE FOLLOWING REPORTS  
HOWARD A. CARTER, Secretary

### WESTINGHOUSE C-I BACTERICIDAL UNITS (Operating Room, Hospital Nursery and Hospital Ward Models) ACCEPTABLE

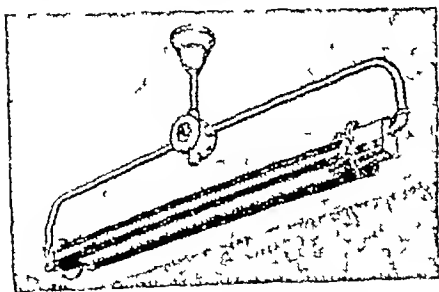
Manufacturer Westinghouse Electric & Manufacturing Company, Radio X-Ray Division, Baltimore

Clinical evidence submitted to the Council on Physical Therapy shows that under properly controlled conditions ultraviolet radiation is effective in killing air borne micro-organisms and may be used to supplement other measures for the prevention of cross infection in hospital wards and nurseries and in operating rooms for reduction of air borne infections in wounds. On the basis of this evidence the Council has undertaken the consideration of ultraviolet disinfecting lamps designed for installation in operating rooms, hospital nurseries and hospital wards. Council acceptance is limited to these installations because the available data do not substantiate the claims for disinfecting of air by ultraviolet radiation in schools, waiting rooms, public gathering places and homes or for the sterilization of solids such as drinking cups. Ultraviolet radiation cannot penetrate deeply and may be absorbed by finger marks, saliva, cosmetics or other foreign matter on a drinking cup, thus would render the radiation ineffective, because to kill a micro-organism a direct hit by ultraviolet rays of sufficient intensity is required.

To have effective disinfection of air by ultraviolet radiation, it is necessary for a sufficient number of properly placed lamps to be installed. A lamp used for disinfecting purposes is a single unit in an installation, compliance of the ultraviolet output of a single lamp unit with the Council's requirements does not insure adequate radiant disinfection. Adequate ventilation of air is also a necessity, because dust laden air provides protection for air borne micro-organisms against the ultraviolet radiation.

In an installation of ultraviolet disinfecting units the total amount of direct and scattered radiation incident on the occupants must be kept below the level that will produce conjunctivitis, erythema and any other (at present unforeseen) injurious physiologic effect that may arise from prolonged irradiation. This requirement should be met by suitable arrangements of the lamp fixtures and baffles and not by requiring the applicants to wear glasses and special covering of exposed parts of

the body (face, hands) normally uncovered. Hence, if the irradiation is of penetrating intensity, in a corridor of the hospital, for example, care should be taken that the attendants do not receive an exposure which will cause injury to the skin or eyes, and particular attention should be taken to



Westinghouse C-I Bactericidal Units

make sure that the degree of irradiation of the space at eye level through which a transient may pass or tarry momentarily will not cause injury to the eyes. Under no circumstances should the occupants of a room be able to look directly at the burner when standing within the region of potent intensity.

Ultraviolet lamps for disinfecting purposes shall have, under suitable ventilating conditions of a room, a concentration of ozone not to exceed one part in ten million.

The Westinghouse C-I Bactericidal Units (trade name) are mounted in fixtures suitable for installation in operating rooms, hospital wards and nurseries. The firm recommends that all

aisle ways, including the spaces between beds and wherever transient personnel carry on their work, be irradiated. When the occupants are to remain in the presence of the radiation, the intensity shall not exceed 0.5 microwatt per square centimeter for a continuous exposure of eight hours and shall not exceed 0.1 microwatt per square centimeter for continuous exposure of twenty-four hours per day.

As used in the trade name for the apparatus, C-I means constant intensity and refers to a manually controlled regulator of the ultraviolet radiation intensity. Gaseous discharge ultraviolet generators lose their intensity with age. The Westinghouse C-I Bactericidal Units are guaranteed for four thousand hours. A manually controlled rheostat which is housed in the fixture may be adjusted from time to time to bring the intensity of the ultraviolet radiation to its initial setting of 20 microwatts

#### Energy Distribution

Wavelength in Angstrom Units	Energy Radiated in Microwatts per Square Centi- meter at 1 Meter
2,537	26.00
2,652	0.793
2,804	0.027
2,894	0.037
2,967	0.135
3,022	0.066
3,129	0.510
3,654	0.435
4,047	0.514
4,359	1.560
5,461	0.850
5,780	0.185

per square centimeter at 1 meter distance. Users of this equipment are advised to check the intensity every month and to adjust the controlled rheostat so that the output energy will be slightly more than the normal intensity of 20 microwatts per square centimeter at 1 meter distance.

The Westinghouse Electric and Manufacturing Company, Radio X-Ray Division, has developed a plan for routine inspection of installed disinfecting lamps for which a service fee is charged. The firm also guarantees that if the generators show on routine test that the intensity has dropped below the initial setting and cannot be brought up to normal intensity, the tubes will be replaced on a pro rata basis.

Westinghouse C-I Bactericidal Units for ward and nursery applications and when installed in some operating rooms consist of a straight chassis which can be either wall, ceiling or floor pedestal mounted. A circular chassis is provided for attachment to circular major surgical lights in operating rooms.

The chassis consists of two transformer and socket housings set approximately 30 inches apart and supported on a yoke. At the junction of the yoke and supporting stem a rheostat is housed for controlling the primary voltage to the transformer. The ultraviolet generating tube is supported at its ends between the two housings, by specially designed shrouded sockets.

Louvers can be attached to the chassis for shading selected portions of the area irradiated. These louvers are adjustable when used with the straight chassis for shading the patient in the bed or bassinet, in wards and nurseries, while irradiating the spaces between the beds and the corridors or aisle ways. An inside nonadjustable louver on the circular C-I unit used in operating rooms shields the radiation from the surgeon's eyes and directs it downward over the operating field. Its radiation cut off is approximately 12 inches above the operating table, which is well below the surgeon's eye level.

The development of suitable glass enables the manufacturer to produce an ultraviolet radiation generator that transmits the maximum amount of disinfecting radiation of wavelengths 2,537 angstroms and a minimum amount of radiation of shorter wavelengths that produce ozone. If the electrodes in these tubes are of the cold cathode type and certain inert gases are added to the mercury vapor it is possible to control the radiation output of these tubes by controlling the voltage impressed across their terminals. The inert gases serve only to aid in starting the arc in the tube and contribute very little to the character of the radiation emitted.

The radiation output of the Westinghouse bactericidal tube at various wave bands is shown by the accompanying table of energy distribution.

The electrical input power required to operate the C-I unit is approximately 50 watts

When a unit is installed, the purchaser should make sure that a sufficient number of lamps are used to produce the correct amount of intensity in the enclosure and that they are arranged correctly so as not to cause harm to the occupants. The Council cannot undertake the supervision or assume the responsibility for satisfactory performance of any particular installation

The Council on Physical Therapy voted to include the Westinghouse C-I Bactericidal Lamp in its list of accepted devices

## WESTINGHOUSE CONSTANT INTENSITY STERILAMP UNITS

(Operating Room, Hospital Nursery and  
Hospital Ward Models)

### WITHDRAWAL OF ACCEPTANCE

Manufacturer Westinghouse Electric and Manufacturing Company, Radio and X-Ray Division, Baltimore.

The Westinghouse Constant Intensity Sterilamp Units, Operating Room, Hospital Nursery and Hospital Ward Models, were announced as acceptable to the Council in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION of May 2, 1942. The units were declared to be a useful supplementary measure of asepsis in hospital nurseries, wards and operating rooms where conditions are carefully controlled.

At the time the Constant intensity Sterilamp units were submitted by the Radio and X-Ray Division of the Westinghouse Electric and Manufacturing Company for consideration by the Council, it was asserted that the complete term "Constant Intensity Sterilamp Units" would be used only for the hospital units, and that this distinction would serve to differentiate between the devices used for accepted purposes and the Sterilamps publicized for other purposes. This has been found to be an impractical arrangement and has proved to be misleading to the profession and to the public.

The term "Sterilamp" has been widely publicized by the Westinghouse Electric and Manufacturing Company. Through extensive publicity it has been presented to the public as a designation for an apparatus that will kill bacteria in lavatories, bakeries, breweries, wineries, canneries, restaurants and so on. It is also claimed to aid in the tenderizing of meat. Such uses are stated in paid advertisements for the Westinghouse Electric and Manufacturing Company. Moreover, publicity for the name "Sterilamp" and for the apparatus is also solicited by the firm in another manner: an active "news service" for the company distributes among various lay and professional publications "news stories" concerning the device. These stories are prepared in such a manner that they may be inserted in the regular columns of the magazine, photographs also are furnished. The items are naturally of a somewhat sensational nature and many of them appear to be finding a place in widely read publications.

An advertisement in *Science* for Oct. 16, 1942 shows a hospital operating room scene (the operating team without adequate protection) and carries the headline "Abandon hope all Germs who enter here." In the body of the advertisement, after a description of the unit, it reads "The commercial applications of the Sterilamp are practically endless. It is used in the Tenderay process for tenderizing meat and in bakeries, breweries, wineries, canneries, restaurants, biological laboratories, lavatories wherever air borne bacteria must be killed or controlled." This advertisement definitely couples the hospital and the commercial uses of the Sterilamp.

The similarity in the names of the accepted Constant Intensity Sterilamp Units accepted for hospital use and the Sterilamp employed for purposes which have not been submitted for acceptance to the Council and the overlapping publicity are considered misleading. The public has no means of discerning an application acceptable to the Council from one that has not been considered by it.

The Council voted to withdraw the acceptance of the Westinghouse Constant Intensity Sterilamp Units.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

**EPHEDRINE HYDROCHLORIDE** (See New and Nonofficial Remedies, 1943, p. 255)

The following dosage form has been accepted:

**BURROUGHS WELLCOME & Co., INC., NEW YORK**

Solution Ephedrine Hydrochloride, 3 per cent. Preserved with chlorobutanol 0.5 per cent, 1 fluidounce and 1 pint bottles.

**LIVER INJECTION** (See New and Nonofficial Remedies, 1943, p. 392)

The following dosage forms have been accepted:

**THE UPJOHN COMPANY, KALAMAZOO, MICH.**

Liver Extract for Parenteral Use, 5 U. S. P. Units per Cc. 2 cc. ampul and 10 cc. rubber capped vial. A sterile aqueous solution of liver preserved with 0.5 per cent phenol.

Liver Extract for Parenteral Use, 10 U. S. P. Units per Cc. 1 cc. and 1½ cc. ampuls and 10 cc. rubber capped vial. A sterile aqueous solution of liver preserved with 0.5 per cent phenol.

**PROCAINE HYDROCHLORIDE** (See New and Nonofficial Remedies, 1943, p. 82)

The following dosage form has been accepted:

**THE UPJOHN COMPANY, KALAMAZOO, MICH.**

Sterile Solution Procaine Hydrochloride 2% 30 cc. rubber capped vials and 100 cc. bottles. Each cubic centimeter contains chlorobutanol 50 mg., procaine hydrochloride 20 mg., sodium bisulfite 10 mg., sodium chloride 84 mg.

**SULFANILAMIDE** (See New and Nonofficial Remedies, 1943, p. 175)

The following dosage forms have been accepted:

**AMERICAN PHARMACEUTICAL CO., INC., NEW YORK**

Sulfanilamide (Powder) 1 ounce, 4 ounce and 1 pound packages.

**PITMAN-MOORE CO., INDIANAPOLIS**

Tablets Sulfanilamide 0.324 Gm. (5 grains)

**THIAMINE HYDROCHLORIDE** (See New and Nonofficial Remedies, 1943, p. 590)

The following additional dosage form has been accepted:

**SCHIEFFELIN & Co., NEW YORK**

Tablets Thiamine Hydrochloride 10 mg.

**ARSPHENAMINE** (See New and Nonofficial Remedies, 1943, p. 198)

The following additional dosage forms have been accepted:

**MERCK & Co., INC., NEW YORK**

Ampules Arsphenamine 10 Gm. and 30 Gm.

**NEOARSPHENAMINE** (See New and Nonofficial Remedies, 1943, p. 203)

The following additional dosage forms have been accepted:

**MERCK & Co., INC., NEW YORK**

Ampules Neoarsphenamine 30 Gm. and 45 Gm.

**PHENOBARBITAL** (See New and Nonofficial Remedies, 1943, p. 502)

The following dosage forms have been accepted:

**AMERICAN PHARMACEUTICAL CO., INC., NEW YORK**

Tablets Phenobarbital 0.032 Gm., 0.016 Gm. and 0.1 Gm.

**THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO**

Tablets Phenobarbital 16 mg., 325 mg., 0.1 Gm.



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SATURDAY, NOVEMBER 20, 1943

## SOUND MEDICAL PRINCIPLES FOR MEDICAL PRACTICE

Elsewhere in this issue<sup>1</sup> appear the principles to govern the evolution of medical practice adopted by the Representative Committee of the British Medical Association and by representatives of many official bodies in Great Britain. This group comprised representatives of general practice, consultant and specialistic practice, public health, rural practice, medical staffs of provincial nonteaching hospitals and others. Special emphasis should be placed on the principle that the health of the people depends primarily on the social and environmental conditions under which they work, and that improvement and extension of measures to satisfy these needs should precede or accompany any future organization of medical service. Also fundamental is the principle that the efficiency of any medical service depends primarily on medical and scientific knowledge, which, in turn, is based on medical education.

The British group establishes the principle that the function of the state should be to coordinate existing provisions, both official and nonofficial, to augment these where necessary, and to secure that they are available without economic barriers. Supplementary to this is the statement that the state should confine itself within these wide limits, invading the personal freedom of both citizen and doctor only to the extent which the satisfaction of these functions demands. The platform of the American Medical Association likewise emphasizes the importance of an agency of the federal government, under which shall be coordinated and administered all medical and health functions of the federal government, exclusive of those of the Army and Navy, and the allotment of such funds as the Congress may make available to any state in actual need for the prevention of disease, the promotion of health and the care of the sick *on proof of such need*. The medical profession has not opposed appropriations by Congress of funds for medical purposes. It asks that the need be shown and that funds be locally rather than nationally administered.

The British Representative Committee again insists on free choice as between doctor and patient as fundamental to sound medical practice and states emphatically that it is not in the public interest that the state should invade the doctor-patient relationship. It is, no doubt, for this reason that the Representative Committee says that it is not in the public interest that the state should convert the medical profession into a salaried branch of central or local government service.

The Representative Committee of the British Medical Association advocates as a step forward in Great Britain the extension of the National Health Insurance Plan to include the dependents of insured persons and others of like economic status, and to cover consultant and specialistic services and laboratory and hospital facilities, as well as general practitioner services. This statement indicates at once how completely lacking has been the National Health Insurance Plan in approximating anything resembling the quality of medical service that prevails in the United States. This recommendation again emphasizes that the National Health Insurance Plan of Great Britain covers wage earners up to a certain level of income only, that it has *not* included the dependents, that it has *not* included others than wage earners of low economic status, that it has *not* provided consultant and specialistic service, or hospital facilities or laboratory service. The gradual development of prepayment plans in the United States has recognized the need for such services. The medical profession has approved prepayment plans to cover the costs of hospitalization, and also prepayment plans on a cash indemnity basis for meeting the costs of medical care. Certainly the gradual evolution in the practice of medicine that has taken place in this country has led to higher standards of medical practice and of medical service than are elsewhere available. The maintenance of the quality of the service is fundamental in any health program.

The American Medical Association, through its House of Delegates, its Board of Trustees and its Council on Medical Service and Public Relations, has urged again and again the continuing evolution of medical practice, based on sound experimentation. Already many state and county medical societies, many industries and many insurance bodies have set up experiments of this type, some of which have already proved to be unsound. In this connection, therefore, the final recommendations of the Representative Committee of the British Medical Association, and of the Medical Planning Commission, deserve increased emphasis. They say:

There should be initiated, by arrangement and agreement between the government and the profession, organized experiments in the methods of practice, such as group practice, including health centers of different kinds, which should extend to general practitioner hospital units attached to general hospitals. Future developments in group practice should depend on the results of such clinical and administrative experimentation.

<sup>1</sup> British Medical Association on Beveridge Plan, this issue, p 777

Only by such controlled scientific experimentation can a sound system of medical service to meet the needs of all the persons in the community be developed

### KETONES AS FUEL FOR MUSCLE CONTRACTION

Following the proposal of the now widely accepted theory of beta oxidation of fatty acids and the accumulation of supporting evidence, the view developed that there is an obligate coupling of oxidative reactions in the metabolism of fat and carbohydrate. The oft repeated aphorism that "Fats burn in the flame of the carbohydrates" was refined to the extent that 1 mole of dextrose was said to promote the oxidation of 2 moles of fatty acid without the production of ketone bodies. The latter compounds were tacitly considered products of the imperfect combustion of fat without value to the organism and the removal of which was attended with more or less disturbance in the acid-base balance of the body and at times with actual tissue damage.

Further study of the metabolism of fat in the light of the implications of the theory of beta oxidation early indicated that other modes of oxidation of fatty acids are also operative in the organism. Now the position of ketone bodies has changed from that of a waste side-product of abnormal fat metabolism to that of a normal breakdown product of fats which in turn is utilized by the organism. Thus it has been shown that the muscle in a normal animal removes ketones from a perfusion fluid or from blood<sup>1</sup> and that this takes place also in the tissue of diabetic organisms.<sup>2</sup> In a recent report<sup>3</sup> data both on human subjects and on experimental animals are cited to show again that ketones can serve as fuel for muscular activity. On ordinary balanced diets containing carbohydrate, vigorous exercise was accompanied by little if any decrease in blood ketone level. On a diet producing ketosis, however, a drop in concentration of ketones in the blood occurred during work with a rise following cessation of muscular activity.

The current view regarding the metabolic significance of ketones does not regard these compounds as accidental products of incomplete combustion of fats but rather as normal intermediates in fat metabolism constantly being produced by the liver<sup>4</sup> and thence distributed to the tissues as fuel for work. When there is a lack of liver glycogen, ketones become of major importance in the production of heat and mechanical energy by the muscles, under these conditions the liver

apparently overproduces ketones, which accounts for the appearance of these compounds in the urine in ketosis. According to the newer views carbohydrate still influences the oxidation of fat, not, however, in an obligate coupled reaction but because it is the preferred fuel for muscle action, the two are oxidized side by side, but in the absence of carbohydrate the emergency need for fuel is met by the accentuation of ketone production from fat. The locus of the influence of carbohydrate on fat metabolism appears to be essentially in the liver rather than in the tissues.

### Current Comment

#### GUESSING AT PHYSICIANS' INCOMES

The U S Department of Commerce recently issued a release on the incomes of physicians of which the following sentence has been widely published and discussed: "The average gross income reported for 1941 was \$8,524, and the average net income \$5,047." Analysis of the methods by which these figures were obtained reveals that they are little more than guesses. The full report of the study on which they are based is printed in the "Survey of Current Business," issued by the Bureau of Foreign and Domestic Commerce of the U S Department of Commerce, October 1943, pages 16 to 20. From this we learn that "questionnaires were sent to a representative sample of physicians who were requested to give information relating to gross and net incomes, costs of practice, age, type of practice, employees, pay rolls and other selected items during the period from 1936 through 1941." A total of 1,898 returned questionnaires were used, about 1 per cent of the 180,496 physicians reported in the American Medical Directory for 1942, when the survey was made. One hundred of these questionnaires from the Southwest were excluded because of "a strong bias in the sample from Texas." For apparently the same reason the returns from Illinois, Indiana and Michigan were not included. There is no explanation of the method by which the sample was selected or any proof that it was representative. It is admitted that there were "special difficulties arising from the impracticability of obtaining a full representation of those of the younger doctors who were withdrawn from independent practice into the armed forces prior to the summer of 1942," but this is purported to have been allowed for by "weighting." In the summary table returns from only twenty-one states are listed. Among those omitted, in addition to those previously mentioned, are Florida, North Carolina, South Carolina, Tennessee, Minnesota, Missouri and Wisconsin. On this very small foundation nevertheless, is built an inverted pyramid of deductions, conclusions, diagrams and classifications based on income by age, localities, size of city and gradation of income all given to the final dollar or to a decimal fraction which gives a semblance of accuracy which the foundation of facts is entirely too slight to support.

1 Snapper I and Grunbaum A. *Biochem. Ztschr.* 201:464 1928  
2 Chaikoff I L and Sokol Samuel. *Am J Physiol* 87:58 (Nov) 1928  
3 Neufeld A H and Rose W D. *Am J Physiol* 128:747 (April) 1943  
4 Mirsky I V. *Am J Physiol* 110:110 (June) 1936  
Barnes R H Drury D R Creely P O and Wick A N. *ibid.* 130:144 (July) 1940  
Crandall L A Jr H B and Ehm C J. *ibid.* 131:10 (Nov) 1940

### SCHIRESON RESTORED LICENSE TO PRACTICE MEDICINE IN NEW JERSEY

The notorious career of Henry J. Schireson, self-styled plastic surgeon, has been repeatedly exposed in *THE JOURNAL*. A medicolegal abstract appearing in this issue (page 790) deals with the action of the Court of Errors and Appeals of New Jersey concerning this disreputable charlatan. The court has just reversed the order of the Board of Medical Examiners of that state, which had previously revoked Schireson's license to practice medicine. Schireson at the time of revocation of his license to practice by the Board of Medical Examiners was serving a term in a federal penitentiary in Pennsylvania for unlawfully concealing assets from a trustee in bankruptcy, for making a false oath in bankruptcy proceedings and for perjury. He had been sentenced after a so-called plea of "nolo contendere." The gist of the court's decision was that under the circumstances he had not been "convicted," whereas if he had pleaded guilty or had been found guilty after a plea of "not guilty" he would have been considered "convicted" of a crime involving "moral turpitude" and the Board of Medical Examiners would have been within its statutory rights in revoking his license. The order of the Court of Errors and Appeals seems difficult to reconcile with common sense. Now who can protect the public against this charlatan? Obviously any one with a loathsome record, such as that of Schireson, should never have been granted a license in the first place!

### POSTWAR DANGERS OF TROPICAL PARASITIC DISEASES

The section of parasitology of the New York Academy of Sciences held a conference last March on parasitic diseases in relation to the war. Current and postwar problems associated with tropical and parasitic diseases were considered.<sup>1</sup> At the end of his discussion of the clinical features of tropical parasitic diseases in war operations Lieutenant Colonel Mackie of the Army Medical School, Washington, D. C., emphasized the postwar dangers from those diseases in the United States. He said:

It is inevitable that numerous carriers and individuals with latent infections will be scattered over the country following demobilization. Certain of these conditions will be transmissible and will subsequently appear in persons who have not been out of the country. Furthermore, the clinical picture attending the combination of familiar endemic disease such as pneumonia with one of these less familiar parasitic infections may be most bizarre and atypical. Each obscures the characteristic features of the other. Contrary to the classic dictum of medical teaching against multiplicity of diagnoses, it must be recognized a priori that such multiplicity will occur and must be promptly recognized. There is urgent need for the inclusion of much more parasitology and tropical medicine in the curricula of our medical schools.

In the discussion the suggestion was made that medical schools should insist on entomology and parasitology as part of the entrance requirements, also that principles of biology might well be taught in colleges from the study of parasites and their vectors rather than from

the more conventional entomology. The menace of tropical diseases in the postwar period presents a challenge to medical schools, public health agencies, medical societies and individual physicians.

### THE ETIOLOGY OF HYPERTENSION

Significant studies from this country, England and Argentina have focused attention on renal ischemia and a resulting humoral mechanism as a significant factor in the etiology of "essential hypertension." Many clinical workers have been skeptical of claims that renal ischemia is the only factor involved. Now important evidence is presented by Gregory, Lindley and Levine<sup>1</sup> that essential hypertension may be a general symptom which may be caused by vasomotor as well as renal factors. These Texas investigators show that spinal anesthesia, which has little effect on the blood pressure of normal people, may produce a profound fall in the blood pressure of patients with essential hypertension. Correction of renal ischemia in experimental hypertension produced by the Goldblatt method is followed by a fall of elevated blood pressure after several hours or days. Spinal anesthesia, however, produces a fall in blood pressure of patients with essential hypertension within a few minutes. When the local anesthetic action has worn off, the blood pressure of hypertensive patients returns in a few moments to the usual level for those patients. This rapidity of action suggests a nervous mechanism. The functional integrity of the peripheral vasoconstrictor apparatus of such hypertensive patients is shown by the usual vasoconstrictor action of epinephrine at a time when their blood pressure is at the lowest levels as a result of the spinal anesthesia. Essential hypertension may apparently have a vasomotor cause of central nervous system origin as well as a possible humoral cause involving the kidneys.

### ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

The Annual Congress on Medical Education and Licensure will be held in the Palmer House in Chicago, Feb. 14 and 15, 1944. The program for the first day will be under the auspices of the Council on Medical Education and Hospitals of the American Medical Association, for the second day under the auspices of the Federation of State Medical Boards. At the first annual conference of the Council on Medical Education in 1902 its chairman, Dr. Arthur Dean Bevan, reported "Your committee finds that the American Medical Association was founded for the purpose of elevating medical education in the United States" and that "this is still the most important function of the American Medical Association." The annual congress has exerted a powerful influence in improving the quality of medical education. The current important problems lend special significance to this next congress. All who are concerned with medical education in wartime and in the peace to follow should plan to attend.

<sup>1</sup> Stunkard, H. W., Coggeshall, L. T., Mackie, T. T., Matheson, Robert and Stoll, N. R. Parasitic Diseases and American Participation in the War, *Ann. New York Acad. Sc.* 44: 189 (Sept. 30) 1943.

<sup>1</sup> Gregory, Raymond, Lindley, E. L., and Levine, Harry. Studies on Hypertension. II. The Effect of Spinal Anesthesia on the Blood Pressure of Hypertensive Patients. Its Possible Bearing on the Pathogenesis of Essential Hypertension, *Texas Rep. Biol. & Med.* 1: 167 (No. 2) 1943.

# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## ARMY

### DISTINGUISHED SERVICE MEDAL TO GENERAL MAGEE

By direction of the President, a Distinguished Service Medal was awarded by the War Department to Major General James C Magee, United States Army, "for exceptionally distinguished and meritorious service in a position of great responsibility as Surgeon General of the Army for four years terminating May 31, 1943." The citation states: "His far sighted and dynamic energy was greatly responsible for our soldiers being able thus far to emerge from battle with the lowest mortality rate among the wounded in our history. The Army has benefited greatly from his eagerness to avail himself of the most expert advice and data from the civilian medical profession in the fields of research against epidemics. General Magee foresaw and prevented a dangerous shortage of surgical instruments by pressing the development of domestic manufacture, resulting in an ample supply and improved quality of these vital materials. Under his guidance the Army's battle against the acquisition of venereal disease produced the lowest rate of infection in the Army's history."

### AVIATION MEDICAL EXAMINERS

Graduation exercises were held at the School of Aviation Medicine, Randolph Field, Texas, on October 7 following completion of the course for aviation medical examiners. The didactic portion of the course was conducted at the School of Aviation Medicine, Randolph Field, Texas and the practical portion of the course at the three army air forces classification centers. The list of students graduating follows:

#### ALABAMA

John L. Branch Major Mont  
gomery  
William DeVlaming Captain  
Birmingham  
Archibald M Gaulocher, Captain,  
Montgomery  
Virgil S Gully 1st Lieut Butler  
Bennett J LaCour Jr, Captain,  
Birmingham

#### ARIZONA

Frederick W Knight, Captain Saf  
ford

#### ARKANSAS

Ross Bizzell Captain Little Rock.  
William M Woods Captain Hunt  
ington.

#### CALIFORNIA

John H Austin, 1st Lieut., Ban  
ning  
Howard F Evans, 1st Lieut.,  
Beverly Hills  
Robert H Finley Jr Captain San  
Francisco  
Antonio J Franzl Major, San  
Francisco  
Walter W Herrmann Major Grass  
Valley  
Nathan S Hintt Captain Los  
Angeles  
William S Ireton Captain Tolare.  
Samuel R Irvine Captain Los  
Angeles  
Richard B Jones Major, San  
Francisco  
Russel V Lee Lieut Col Palo  
Alto.

Milton Lerner 1st Lieut., Olive  
View

Frank E Lones Captain Paso  
Robles

Robert G Lukens 1st Lieut. San  
tarium

William W Mills 1st Lieut San  
Mateo

Carl E. Nemethi 1st Lieut., Los  
Angeles

Edmund W Overstreet Captain,  
San Francisco

Glenn A Pope Captain, Oakland

Thomas B Rhone Captain Orange

Phillip E. Svec 1st Lieut. Los  
Angeles

Neville T Ussher Major, Santa  
Barbara

Richard W Walt, Captain, San  
Bernardino

Frank W Wilks Captain Haggin  
wood

William T Zimmermann Captain  
Los Angeles

#### COLORADO

George M Harrison 1st Lieut.,  
Denver

Frank B Olsen 1st Lieut Ura  
van.

Howard C Smith Captain Colo  
rado Springs

#### CONNECTICUT

Donald L. Ferris Captain, Green  
wich

John S Hathaway Captain New  
Haven.

Charles E. Windus Captain New  
Haven

#### DELAWARE

Hans E Burkhardt, Captain,  
Wilmington

#### DISTRICT OF COLUMBIA

John B Brady Captain Wash  
ington

William R Coleman Captain  
Washington

Fratris L. Duff Lieut Col, Wash  
ington

#### GEORGIA

Major William O Bedingfield,  
Major Savannah

John M Hulsey Jr Major Gaines  
ville.

Edmond H Kalmon Jr, Major,  
Albany

Weems R Pennington 1st Lieut,  
Macon

William G Simmons, Captain  
Sylvania

#### IDAHO

Howard E Baughman, Captain,  
Council

Harvey A Hatch 1st Lieut, Idaho  
Falls

Richard C Kaar, Captain Burley

Samuel D Simpson, Captain Cald  
well

#### ILLINOIS

Charles F Alderson Captain East  
St Louis

Soddie J Barkett Captain Cairo

John B Beare, Captain, Chester

James W Clark Major Chicago.

Howard D Countryman Major,  
Rockford

Joseph A Davis 1st Lieut  
Chicago

Joseph C Ehrlich Captain Chicago

Edward A Fahnestock Captain,  
Bridgeport.

Harry L Faulkner Major Chicago.

Roy L Kenward Captain Melvin

Philip J Lopresti 1st Lieut  
Chicago

Herman L Mishkin Captain  
Chicago

Jean H Motter 1st Lieut, Chicago.

Samuel C Noto 1st Lieut.  
Chicago

Herbert P Rasche 1st Lieut.,  
Maywood.

Keith Rhea Major Clinton

Morton Simons Major Chicago

Guy L Tournay, 1st Lieut,  
Quincy

John W Vertuno Captain, Melrose  
Park

Max I Vinnecour Captain  
Chicago

Hugh H Worsley 1st Lieut.  
Chicago.

#### INDIANA

Dale D Dickson, Captain Letts.

Forest M Kendall 1st Lieut  
Alexandria

Milo O Lundt Captain Elkhart.

George W Macy, Captain, Colum  
bus.

Richard C Miller Captain North  
Vernon.

Harold D Pyle Major, South  
Bend.

Ames R Templeton Captain South  
Bend

Fred L Toumey Captain Ridge  
ville.

#### IOWA

Luther C Hickerson, 1st Lieut,  
Brooklyn

Philip G Keil 1st Lieut, Iowa  
City

Roland T Smith 1st Lieut, Des  
Mones

#### KANSAS

William C Fairbrother Captain,  
Madison

Joseph H Johnson, Captain El  
Dorado

#### KENTUCKY

Robert C Bock Captain, Louisville

Eugene J Burns Major, Louis  
ville

Charles L. Roser Jr, Major, Louis  
ville

Robert W Smith 1st Lieut.  
Owensboro

Marion C Spradlin Captain  
Somerset

Woodford B Troutman, Major  
Louisville

#### LOUISIANA

Louis E Chauvin 1st Lieut., Abbe  
ville.

Wilbur L Edgerton, Captain  
Simmesport

Jack R Frank, 1st Lieut Crowley

John W Henrickson 1st Lieut.  
New Orleans

David W Kennedy, Captain,  
Vivian

Frank M Lhotka 1st Lieut. New  
Orleans

Jack G Miller, Captain New Or  
leans

Harold J Sabatier, 1st Lieut.  
Elton

Cecil L Sinclair 1st Lieut New  
Orleans

#### MAINE

Kenneth A LaTonrette Captain  
Farmington

Edward A McFarland 1st Lieut  
Lewiston.

#### MARYLAND

Nicolas C Camara Peon, 1st Lieut  
Baltimore

Harold E Houck Captain Galena

Frederick S Wolf Captain Balti  
more

#### MASSACHUSETTS

Kenneth V Dalton 1st Lieut  
Weymouth

Bernard J Doyle 1st Lieut. East  
hampton

Herman Felsen, 1st Lieut East  
hampton.

Irvin F Hermann Captain Boston.

Raymond W Latham, 1st Lieut,  
Boston.

Everett T Tomb Major, Fram  
ingham

Sidney R Wilker Captain Cam  
bridge

#### MICHIGAN

Homer C Coppock 1st Lieut.  
Grand Rapids

William D Frostic Captain  
Wyandotte.

Howard H Gradis 1st Lieut  
Eloise.

Earl E. Hamilton Captain,  
Traverse City

Walter N Heibert Captain, Yale  
Jack Lapides, 1st Lieut, Ann  
Arbor  
Walter K Locklin, Captain, Hart  
ford  
John B Nicholson, Captain, Mar  
quette  
Charles TenHouten, Major, Paw  
Paw  
Jacob VanLooy, Captain, Belding

## MINNESOTA

Gerald G Geissler, Major, Cloquet  
Henry B Troost, Captain, Mankato  
Richard E Watson, 1st Lieut, St  
Paul  
Thomas G Wellman, 1st Lieut,  
J Lake City

## MISSISSIPPI

Robert P Hudson, Captain, Utica  
John S Lyle, Captain, Gulfport

## MISSOURI

Lec A Hall, Captain, Clayton  
Russell D Harris, Major, Carthage  
Edward J Kloess, Major, St  
Louis  
Philip S Mountjoy, Captain, St.  
Louis  
Samuel E. Schechter, 1st Lieut,  
St Louis  
Bernard Schwartzman, Captain, St  
Louis

## MONTANA

John T Parker, 1st Lieut, Miles  
City

## NEBRASKA

Donaldson W Kingsley, Major,  
Hastings  
Ernest E Lennemann, Captain,  
Falls City

## NEW JERSEY

Incien F Della Fera, 1st Lieut,  
Newark  
Edward H Dyer, 1st Lieut, Vent  
nor  
Leo Joseph Kelly, 1st Lieut, Perth  
Amboy  
Ralph M Lechrasse, Captain, New  
ark  
Padie Richlin, Captain, New  
Brunswick  
Howard C Robbins, Captain,  
Bridgeton  
Edward Shren, Captain, Camden

## NEW MEXICO

Earl L Malone, 1st Lieut, Ros  
well

## NEW YORK

Irving H Beckwith, Major, White  
Plains  
Richard C Blackwell, Captain, New  
York  
Merol E Brickner, 1st Lieut,  
Gloversville  
Donald W Brundage, Captain,  
Pulaski  
John N Daly, Captain, Jamaica  
Herman J Dick, 1st Lieut, Syra  
cuse  
Isidore L Epstein, Captain, Brook  
lyn  
Robert M Fisher, Captain, New  
York  
Frank J Frigala, Captain, New  
York  
William J Gartland, 1st Lieut, St  
Albans  
Daniel L Goldstein, Major, New  
York  
Rex E Greer, Major, Castle Point  
Morton M Halpern, 1st Lieut,  
Brooklyn  
Frederick A Hill, Captain, Brook  
lyn  
Arthur H Horowitz, 1st Lieut,  
Floral Park  
Seymour A Horwitz, 1st Lieut,  
New York  
William C Karl, 1st Lieut,  
Gloversville  
August M Kleeman Jr, 1st Lieut,  
Warwick  
Charles Klein, 1st Lieut, New  
York

Frederick I Landau Jr, Captain,  
Bronxville  
John W Latcher, 1st Lieut,  
Onconta  
John G Lipani, 1st Lieut, Staten  
Island  
Joseph F McClughan, Captain,  
Newburgh  
Gilbert H Mudge, Captain, New  
York  
Henry Joseph Noerling, Captain,  
Valatie  
Nino V Pamissidi, 1st Lieut,  
Jamaica  
Maurice S Raben, 1st Lieut, Val  
halla  
Mark H Rottner, 1st Lieut, New  
York  
David Schier, Captain, Jamaica  
Stephen M Schwartz, Major, Rich  
mond Hill  
George A Shetter, 1st Lieut, New  
York  
Steward H Smith, 1st Lieut, New  
York  
Charles D Stinard, 1st Lieut,  
Coxsackie  
Paul M Traub, Major, Washing  
tonville  
Leo R Varon Major, New York  
Gerard A Vetromile, 1st Lieut,  
Merrick  
Mortimer Weiss, Captain, Brooklyn  
Charles L Wood, Captain, Kew  
Gardens

## NORTH CAROLINA

William F Eckbert, Captain, Cross  
nore.  
John Wesley Frazier, Major, Salis  
bury  
Jacob H Shuford, Captain, Hick  
ory

## NORTH DAKOTA

Maxwell H D Johnson, 1st Lieut,  
Watford City

## OHIO

Ernest Z Bower Jr, 1st Lieut,  
Ravenna  
Robert A Breckenridge, Captain,  
Cuyahoga Falls  
Milton H F Gustafson, Captain,  
Cleveland  
Robert K Miles, 1st Lieut., Thomp  
son  
Rudolph J Pospisil, 1st Lieut,  
Springfield  
James A D Schaal, Captain, Cin  
cinnati  
Frederick S Sperry, 1st Lieut,  
Akron

## OKLAHOMA

David E Cantrell Jr, Captain,  
Healdton  
William J Sayles Captain, Miami  
Alexander Shadid, 1st Lieut, Elk  
City

## OREGON

Siegfried R Berthelsdorf, Captain,  
Olene  
Charles L Coyle, Captain, Medford

## PENNSYLVANIA

Benjamin C Barnes, Captain,  
Philadelphia  
James A Barry, Captain, Pitts  
burgh  
Frank C Bowers, Captain, Erie  
Homer V Bradshaw, Captain,  
Pittsburgh  
Charles D Coppes, 1st Lieut,  
Philadelphia  
Emil J Datesh, 1st Lieut, Dor  
mont  
William H Diehl Major, Lebanon.  
Robert R Geer, 1st Lieut., Johns  
town  
William E Glosser Jr, 1st Lieut.,  
Reading  
David H Hershfield, Captain,  
Wilkes Barre  
Kelse M Hoffman, Major, Frank  
lin  
William H Karmany, Captain,  
Harrisburg  
Peter G Kutra, 1st Lieut, McIn  
tyre

Joshua Levitsky, 1st Lieut, Phila  
delphia  
Marlin C Moore, 1st Lieut, Mount  
Carmel  
Joseph D Moylan, Captain, Scrant  
on  
Jerome J Rubin, 1st Lieut, Phila  
delphia  
Wilfred H Wincy, 1st Lieut,  
Johnstown  
Robert H Yockey, 1st Lieut,  
Butler  
Robert B Zerbc, Major, Tremont

## RHODE ISLAND

Frank C J Jadosz, Captain, Provi  
dence

## SOUTH CAROLINA

Iawson P Barnes, Captain, Ben  
nettsville  
Merchant W Colgin, Captain,  
Charleston  
James L. King, Captain, Plum  
Branch  
John T Stone, 1st Lieut, Green  
wood

## TENNESSEE

Tom N Humphrey, Captain, Sel  
mer  
Maurice Selgman, Captain, Nash  
ville

## TEXAS

Thomas B Abney, Captain, Over  
ton  
William B Adamson, Major, Abi  
lene  
Robert C Atmar, Captain, San  
Antonio  
Adolph W Brazda, Captain,  
Ranger  
James Mitchell Bown, Captain,  
Marlin  
Charles K. Bruhl, Captain, Hous  
ton

Dan H Byram, Captain, Port  
Arthur  
Charles L Concklin, 1st Lieut,  
Corpus Christi  
Richard H Driessel, 1st Lieut.,  
Fort Worth  
John W Eschenbrenner Jr, Major,  
Fort Worth  
Robert M Johnson, Major, Hous  
ton  
S Braswell Locker, 1st Lieut, San  
Antonio  
Anthony M Orlando, Captain, San  
Antonio  
Guy L Pattillo, Captain, Abilene  
Herbert M Sanford, Captain,  
Perryton  
Thomas J Scania, 1st Lieut, West.  
John R Shipp, Captain, Cranfills  
Gap  
William S Warren, 1st Lieut,  
Center  
Byron P York, Major, Houston

## VIRGINIA

Louis S Leo, Major, Norfolk  
Alfred Ogus, 1st Lieut, Norton.

## WASHINGTON

Roll N Dillon, Captain, Seattle  
Frank H Douglass, Major, Seattle  
John E Flynn, Captain, Everett  
Robert L King, Major, Seattle.  
Roderick A. Norton, 1st Lieut.,  
Tacoma  
Francis C Spratt, Captain,  
Olympia.  
Kenneth H Sturdevant, 1st Lieut.,  
Puyallup  
Don G Willard, Captain, Tacoma.

## WISCONSIN

Kermit W Covell Captain, Racine  
John S Giffin, 1st Lieut, Ocono  
mowoc

## MEDICAL UNIT BEHIND FRONT LINES

With the Fifth Army in Italy and within sight and sound of the battle, a group consisting of 22 doctors, 18 nurses and 58 enlisted men in the U S Army is working immediately behind our front lines doing major operations that are saving the lives of many American soldiers. This field hospital, under the command of Major Samuel A Hanser of St Louis and his administrative officer, Lieut Robert Brenncman of Harrisburg, Pa., is divided into three platoons which leap frog each other as the army advances. Dr Hanser has taken the three platoons of 6 doctors and 6 nurses each, and 2 roving surgeon specialists, to within a few miles of the front to handle severely wounded cases. When a man is hit the litter bearers and first aid men search him out and he receives what treatment the field dressing station affords. If his condition is such that he is able to ride over roads cut into mire and ruts by bombs and mines, he will be taken by ambulance to the evacuation hospital, 10 or 15 miles behind the lines. However, if he is suffering from shock or loss of blood or exposure, or is so severely wounded that he cannot survive that ride, he will be taken the 2 or 3 miles to the field hospital, where he can get instant expert attention. Although the hospital is equipped with the materials and instruments of a large city hospital, these doctors and nurses eat and sleep in unfloored tents and work under the most difficult circumstances. While the new emergency field service loses more men than other hospitals because it receives the most serious cases, its courageous staff has the great satisfaction of knowing that hundreds of lives are being saved through its work.

VETERAN ARMY NURSE DIES AT  
WALTER REED HOSPITAL

The War Department announced on September 10 the death of Major Emily H Weder, Army Nurse Corps, assistant to the principal chief nurse at Walter Reed General Hospital Washington, D C. Major Weder, formerly of Philadelphia entered the Army Nurse Corps on Jan 5, 1918.



**CAPTAIN LAYDEN AWARDED  
VALOR MEDAL**

Capt Milton J Layden, flight surgeon in the Army Air Force, has been awarded the Soldier's Medal for valor. The citation which accompanied the award said: "The Soldier's Medal is being awarded for the outstanding heroism of Captain Layden in the face of imminent danger. He voluntarily rendered heroic assistance at the scene of an appalling disaster occasioned by a terrific explosion of bombs. Trucks loaded with bombs were burning furiously, but despite the danger of imminent explosion Captain Layden labored to give all possible aid and assistance to the injured. Charred and maimed bodies were treated unmindful of the warning given him that further explosions would occur. He was forced to withdraw by order of superior authority. The heroism, valor and courage in the

face of great danger reflects great credit on Captain Layden and the armed forces of the United States." Dr Layden graduated from the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, in 1938. He enlisted in the army in October 1940 and received his wings from the School of Aviation Medicine, Randolph Field, Texas.

**PRISONER OF THE JAPANESE**

According to information received by his father and published in the *Detroit Free Press* September 18, Capt Robert K. Whiteley, formerly of Detroit, is being held a prisoner of war by the Japanese in the Philippine Islands. Captain Whiteley graduated from the University of Michigan Medical School, Ann Arbor, in 1933.

**PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS,  
DENTISTS AND VETERINARIANS****HOSPITALS NEEDING INTERNS  
AND RESIDENTS**

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their Procurement and Assignment Service quotas for Jan 1, 1944.

1 Prospective interns who have not yet obtained a hospital appointment should communicate with these institutions either directly or through the office of the dean of their medical school. Assistant residents and residents should direct their applications to the hospital superintendent in the usual manner.

2 Institutions having a shortage of interns or residents are again invited to make their needs known to the Council on Medical Education and Hospitals. In reporting shortages, hospitals should indicate the number of interns, assistant residents and residents needed to complete their quotas for Jan 1, 1944.

**Hospitals Reporting Vacancies for  
Interns or Residents**

(Continuation of list in *THE JOURNAL* November 13 pp 707-708)

**CALIFORNIA**

St. Joseph's Hospital San Francisco. Capacity 289 admissions 7,014  
Sister Mary Raymond R.N. Superintendent (interns 2 residents)

**CONNECTICUT**

St. Vincent's Hospital Bridgeport. Capacity 325 admissions 9,000  
Sister Louise Superintendent (3 interns)

**ILLINOIS**

Belmont Community Hospital Chicago. Capacity 125 admissions 3,399  
Mrs Gertrude F Scofield Superintendent (3 interns)  
Englewood Hospital Chicago. Capacity 187 admissions 5,263  
A. R. Zeiter Superintendent (4 interns)  
Hospital of St. Anthony de Padua Chicago. Capacity 269 admissions 7,041  
Sister Alberta R.N. Superintendent (3 interns)  
St. Bernard's Hospital Chicago. Capacity 242 admissions 7,401  
Mother Cecelia Murray R.N. Superintendent (intern)  
St. Elizabeth Hospital Chicago. Capacity 307 admissions 10,777  
Sister M. Vetusca Superintendent (3 interns)

**INDIANA**

St. Joseph's Hospital South Bend. Capacity 192 admissions, 4,494  
Sister Mary Ellen R.N. Superintendent (2 interns)

**KENTUCKY**

SS. Mary and Elizabeth Hospital Louisville. Capacity 205 admissions, 4,817  
Sister Ludovica R.N. Superintendent (intern)

**MAINE**

Eastern Maine General Hospital Bangor. Capacity 243 admissions, 5,467  
Dr Allan Craig Medical Director (4 interns)

**MARYLAND**

Maryland General Hospital Baltimore. Capacity 264 admissions 5,509  
Stuart B. Crawford Superintendent (6 interns)

**MICHIGAN**

St. Joseph's Mercy Hospital Ann Arbor. Capacity 250 admissions, 5,937  
Sister M. Philippa Superintendent (interns residents)  
Saginaw General Hospital Saginaw. Capacity 166 admissions 4,896  
Kate J. Harl Superintendent (2 interns)  
St. Mary's Hospital Saginaw. Capacity 204 admissions 5,318  
Sister Electa R.N. Superintendent (2 intern 1 resident)

**MINNESOTA**

St. Mary's Hospital Minneapolis. Capacity 320 admissions 9,291  
Sister M. Conehessa Superintendent (6 interns)

**MISSOURI**

St. Joseph's Hospital St. Joseph. Capacity 168 admissions 3,022  
Sister Emile R.N. Superintendent (1 intern 1 resident)  
St. Louis City Hospital St. Louis. Capacity 1,127 admissions 15,013  
Mr. Clinton F. Smith Superintendent (residents—med. OBG)

**MONTANA**

Murray Hospital Clinic Butte. Capacity 120 admissions 3,043  
Mr. W. H. Rex Business Manager (2 interns)

**NEW JERSEY**

St. Peter's General Hospital New Brunswick. Capacity 227 admissions, 6,034  
Sister R. Letellier Superintendent (2 interns 1 resident)  
Perth Amboy General Hospital Perth Amboy. Capacity 197 admissions 4,932  
Mr. George C. Schicks Superintendent (3 interns)

**NEW YORK**

The Kingston Hospital Kingston. Capacity 118 admissions 2,839  
Jessie P. Allan Superintendent (resident—mixed)  
New Rochelle Hospital New Rochelle. Capacity 309 admissions 6,516  
Alex E. Norton Superintendent (resident)  
Jewish Memorial Hospital New York. Capacity 217 admissions 4,994  
Louis Miller Superintendent (3 interns)  
New York Infirmary New York. Capacity 160 admissions 2,595  
Miss M. Marion Smith Administrator (5 interns residents—Med OB Surg—women only)

**OHIO**

St. Mary's Hospital Cincinnati. Capacity 230 admissions 5,114  
Sister Theonilla, R.N. Superintendent (4 interns)  
Lutheran Hospital Cleveland. Capacity 137 admissions 4,121  
Lee S. Lampher Superintendent (3 interns)

**PENNSYLVANIA**

The Woman's Hospital of Philadelphia Philadelphia. Capacity 166 admissions 2,887  
Dora Ruland M.D. Medical Director (3 interns resident—medicine)  
Passavant Hospital Pittsburgh. Capacity 120 admissions 2,203  
Sr. Martha Pretzlaff Superintendent (3 interns)  
Sewickley Valley Hospital Sewickley. Capacity 185 admissions 3,931  
Miss Helen Pratt Superintendent (4 interns)

**RHODE ISLAND**

Charles V. Chapin Hospital Providence. Admissions 760 (psv) Dr William Hindle Superintendent (resident—psychiatry)

**TENNESSEE**

St. Joseph Hospital Memphis. Capacity 297 admissions 8,670  
Sister M. Sponsaria Superintendent (4 interns)

**UTAH**

St. Mark's Hospital Salt Lake City. Capacity 164 admissions, 4,286  
O. V. Wardrop Superintendent (4 interns)

**VIRGINIA**

Norfolk General Hospital Norfolk. Capacity 333 admissions 9,584  
Mr. W. P. Earnger Superintendent (interns)

**WASHINGTON**

Sacred Heart Hospital Spokane. Capacity 368 admissions 9,274  
Sister Henrietta Superior (8 interns)  
St. Joseph's Hospital Tacoma. Capacity 344 admissions, 6,853  
Sr. Patricia Francis (interns)

**WEST VIRGINIA**

Wheeling Hospital Wheeling. Capacity 236 admission 4,557  
Sr. Ruth, Administrator (interns)

## MISCELLANEOUS

## SOVIET SURGERY

[NOTE—The following article was received from Moscow via Press Wireless from the Soviet Scientists' Antifascist Committee, Academician Sergei Spasokukotsky]

During the war of 1914-1918 and the civil war which followed, the insufficiency of surgical work in prerevolutionary Russia was revealed. Russian surgeons were enthusiastic and possessed sufficient knowledge to enable them to organize the surgical profession. The theoretical training of a high order which obtained in Russian universities made this easier. The Soviet government met the demands of surgical clinics and hospitals. Special factories were established for the production of x-ray apparatus and all kinds of surgical instruments and hospital equipment. Specialization in various branches of surgery was introduced, and the number of medical colleges and students in training was greatly increased. Postgraduate institutes for doctors were organized in all capitals, republics and district centers in place of the single college that formerly existed in Leningrad. In place of the specialized surgical institute that existed—the Orthopedic Institute, Leningrad—the following specialized institutes were established: general surgery, gynecology, urology, ophthalmology, x-ray, serum and other institutes. In these institutes free treatments were given, providing a basis for rapid development of surgery.

## ABDOMINAL SURGERY

Until 1918 operations for hernia and appendicitis were conducted only between attacks. Operations on the liver, stomach and kidneys were performed only in university clinics. By 1924, when surgical congresses were resumed, great advances had been made and operations of this type were being carried out by many surgeons.

Professor Ushensky announced that he had performed fifteen hundred operations on the stomach and intestine, he is by no means the only surgeon in this field. Material has been accumulated on the shortcomings of these operations and the trend favors resection of ulcers.

By 1936 first aid service had been organized for all Soviet cities. This also opened an era of urgent surgical treatment for ulcers of the stomach and intestine and for acute appendicitis with immediate closing of the wound. Successes achieved in this field made urgent surgical treatment popular in village hospitals. In Paris in 1930 S. Yudin read a paper on fifteen hundred resections for perforating ulcers. The death rate for operations on the appendix was very small, no more than 2 per cent. Operations for abdominal hemorrhages were less successful. There were but few surgeons who favored this operation including Spasokukotsky and S. Yudin. Later success with this operation was connected with widespread employment of blood transfusions.

In the year preceding the war a large number of branches of the Central Institute for Blood Transfusions (Prof. A. Bogdarsarov) were reestablished and arrangements made for preserving blood. The methods had been thoroughly studied and proved before the war in hundreds of thousands of cases in various diseases. During the present war the whole front and all the hospitals have been supplied with all the blood they ask for. In 1928 a proposal was made that surgeons wash their hands in 0.5 per cent solution of ammonia (Spasokukotsky, Kochergin). The proposal was widely adopted.

More than a thousand surgeons all over the Soviet Union have confirmed the value of the method and at the same time have shown that suppuration intervenes in only 2 or 3 per cent of abdominal operations.

A large number of successful operations for cancer of the lower part of the alimentary canal—larger than any other country—have been carried out by using artificial alimentary tubes.

## THORACIC SURGERY

During the war of 1914-1918 there were a large number of deaths from pulmonary wounds and complications. This attracted wide attention among surgeons (Burdenko, Spasokukotsky, Grekov, Linberg). They established the fact that pleurisy is a secondary phenomenon which heals normally when

the original nidus has been properly treated. When these methods were applied to war conditions a greatly decreased death rate ensued. In a special hospital for thoracic surgery Linberg reduced the death rate 5 per cent in the wards as early as 1939.

## CRANIAL SURGERY

A method of healing brain suppuration by perforation has been developed and has met with considerable success. Bakulev developed a strict routine, encephalography, punching the skull, drawing off pus and replacing it with air.

A number of neurosurgical institutes (Burdenko, Bakulev, Polenov, Geimanovich and Shamov) have been established, and surgeons' views on the subject have been changed. The five thousand operations performed in the Burdenko Institute with 7 per cent mortality are an inspiration to Soviet surgeons.

The danger of tetanus has been removed completely. Gas gangrene has almost disappeared. The precept "closed wounds" during the war of 1914-1917 was taken up later by first aid stations, where operations were done and wounds immediately stitched. All doctors have adopted these methods with excellent results (85 to 90 per cent). Primary treatment with excision of all shattered bloodless tissue attained even greater significance. This accounts for the light form of gas gangrene and the reduction in the number of amputations and made possible the use of plaster splints, invaluable when patients are being transported.

With fractures surgeons now think not only of setting bones correctly but also of the most rapid way to return the limb to its functions.

## HUGE HOSPITAL PLANE DEDICATED

The *Spirit of Norwood*, the Douglas Skymaster purchased with war bonds sold during the month of October in the Norwood Park area (Ill.), was dedicated on November 3 at the Douglas plant. The plane made its army acceptance flight on November 2 over the neighborhoods where the bond buyers reside. The hospital ship is equipped to carry 52 litter beds, 4 doctors and a crew of 6. The cost of the ship was \$500,000, but the communities raised \$766,880. Picture postcards of the ship will be sent to the 1,200 men and women in service from the area to show them "we're doing what we can here at home." The drive included the communities of Edgewood, Rosedale and Higgins as well as Norwood Park, Ill.

## PUBLIC HEALTH UNDER HITLER

The Dinsburg edition of the *National Zeitung* of August 7 features a notice reminding the population once more that midwives, dental practitioners, nurses, masseurs and fumigation staffs are not allowed to leave the town without permits from the Health Office and their professional organizations.

NPD of August 21 reports from Kiev that the building of a number of hospitals in the Ukraine has begun as part of the extensive scheme for improving health conditions in the occupied eastern territories. The first seven hospitals in the biggest towns of the country will be ready by Christmas.

*Le Petit Dauphinois* of August 21 published the following official notice: "The Regional Director of Public Health of Lyons informs doctors in the departments belonging to the Lyons health area that antipoliomyelitis serum may be obtained in the case of an emergency day and night, including Sundays, from the health inspector of the Rhone and Lyons region."

According to *Le Petit Journal* of August 24, at Grasset's request Professors Alajouane and Rohmer, the well known poliomyelitis specialists, lectured to a large audience of local doctors in Clermont-Ferrand hospital lecture room in order to enable them to fight the disease efficiently.

Dnes of July 3 states that the number of doctors in Bulgaria is about 3,500.

# ORGANIZATION SECTION

## BRITISH MEDICAL ASSOCIATION ON BEVERIDGE PLAN

The government has promised to issue a 'white paper' setting forth the official proposals in regard to the medical provisions of the Beveridge report and to give opportunity for full discussion by the medical profession before any legislation is enacted. This "white paper" had not appeared when the annual representative meeting of the British Medical Association, which is comparable to the House of Delegates of the American Medical Association, met September 21-23. Although much of the time of the meeting was given to discussion of "The Future of Medical Services," there was no definite legislative proposal available for consideration, and action was limited to statements of principles and general positions. The attitude of the meeting was shown by a vote of 200 to 10 in favor of the resolution that "In the opinion of the Representative body the creating of a whole time salaried state medical service is not in the best interest of the community."

The Representative Committee, which had been appointed to study the whole subject and which had previously submitted a report, presented its recommendations, which with some amendments, were adopted in the following form:

(A) (To be embodied in a preamble recalling the principles set out in the "General Medical Service for the Nation")

- 1 The system of medical service should be directed to the achievement of positive health and the prevention of disease no less than to the relief of sickness.
- 2 There should be available for every individual the services of a general practitioner or a family doctor of his own choice.
- 3 Consultants and specialists, laboratory services, and all necessary auxiliary services, together with institutional provision when required should be available for the individual patient, normally through the agency of the family doctor.
- 4 The several parts of the complete medical service should be closely coordinated and developed by the application of a planned national health policy acceptable to the profession as a whole.

(B) The health of the people depends primarily on the social and environmental conditions under which they live and work on security against fear and want, on nutritional standards, on educational facilities and on the facilities for exercise and leisure. The improvement and extension of measures to satisfy these needs should precede or accompany any future organization of medical services.

(C) The efficiency of a country's medical services, both preventive and curative, depends on the available medical and scientific knowledge, on the character and extent of medical education, on the sufficiency and quality of personnel, on facilities for treatment and on the absence of any economic barriers that impede the utilization of such services. Thus in order to improve the country's medical services the facilities and resources for medical research should be greatly increased and methods devised for their adequate application. Medical education both undergraduate and postgraduate should be maintained on a high standard and be adapted to modern needs, there should be sufficiency of personnel and institutional accommodation and wherever economic barriers prevent an individual taking advantage of medical services such barriers should be removed.

(D) Subject to these general and overriding considerations the functions of the state should be to coordinate existing provision both official and nonofficial to augment it where necessary and to secure that it is available without economic barrier to all who need it. The state should confine itself within these wide limits invading the personal freedom of both citizen and doctor only to the extent which the satisfaction of these functions demands.

(L) It is not in the public interest that the state should convert the medical profession into a salaried branch of central or local government service. The state should not assume control

of doctors rendering individual or personal health service. The profession rejects any proposal for the control of the future medical service by local authorities as at present constituted.

(F) Free choice as between doctor and patient should be preserved as a basic principle of future health services, and no administrative structure should be approved which does not both permit and encourage such free choice.

(G) It is not in the public interest that the state should invade the doctor-patient relationship. The loyalty and obligation of a doctor rendering personal health service to an individual patient should be to that patient and to none other.

(H) Free choice of doctor should be reinforced by a method of remuneration which relates remuneration to the amount of work done or the number of persons for whom responsibility is accepted.

(I) Every member of the community should be free to consult the doctor of his choice either officially, as when he consults the doctor he has selected under an official service, or privately, as when he consults some other doctor, whether that doctor is a member of an official service or not. Nothing should be done to encourage the splitting of the medical profession into two groups—the official doctors and the nonofficial doctors.

(J) Consultants and specialists should normally be attached to the hospital. For those persons who wish to be treated in private accommodations, whether part of a hospital or not, private consulting practice should continue.

(K) The central administrative structure should be a corporate body concerned only with civilian health services and should be responsible for all civilian health services. This central administrative body should be advised on medical matters including personnel, by a medical advisory committee representative of the medical profession which should be at liberty to publish its findings. Locally, new administrative bodies, responsible to the central authority, should cover wide areas and should be representative directly or indirectly of the community served and in appropriate proportion, of the local medical profession and voluntary hospitals. They should be advised on medical matters, including personnel, by local medical advisory committees representative of the local medical profession which should be at liberty to publish their findings. These administrative changes should be regarded as foundation changes to be agreed before other changes are initiated.

(L) All branches of medical practice should be regarded as a single service, and it is undesirable that a detailed scheme for general practitioners should be framed and put into operation without corresponding arrangements for other branches of practice.

(M) Pending the consideration and completion of the foundation administrative changes mentioned in K as a step toward the satisfaction of assumption B there should be extension of national health insurance to include dependents of insured persons and others of like economic status and to cover consultant and specialist services and laboratory and hospital facilities as well as general practitioner service. The service should be improved from time to time as recommended by the profession. Those persons with incomes above an agreed limit could if Parliament decides to make the service available to every member of the community, be permitted to become voluntary contributors to the extended service. A reconstruction of insurance committees would be necessary.

(N) There should be initiated by arrangement and agreement between the government and the profession organized experiments in the methods of practice such as group practice including health centers of different kinds which should extend to general practitioner hospital units attached to general hospitals. Future developments in group practice should depend on the results of such clinical and administrative experimentation.

## OFFICIAL NOTES

COUNCIL ON MEDICAL EDUCATION  
AND HOSPITALS

Dr Walter L. Bierring, secretary of the Federation of State Medical Boards, has reported that all of the state medical boards requiring the completion of a twelve months internship for medical licensure have approved by official action the acceptance of a nine months internship in a civilian hospital as a war emergency measure, accepting subsequent medical service with the armed forces in lieu of the three months that could not be completed in a civilian hospital.

Among the actions taken at the meeting of the Council on Medical Education and Hospitals on November 7 were the following:

The Annual Congress on Medical Education and Licensure will be held at the Palmer House in Chicago on Feb 14 and 15, 1944.

Regarding the selection of medical students, the Council believes that it is essential to satisfactory programs of medical education that

1 Mutually agreeable relations exist between the student and the school, hence that every effort should be made to allow the element of choice to operate between the student and the medical school in the decision as to his assignment.

2 The group charged with the duty of selecting students accepted for medical education include representatives of the medical schools of the district, and that the actual assignment of a student to a specific medical school be subject to the approval of that school.

3 The general principles herewith suggested be as nearly uniform as possible throughout the country.

The study of postwar hospital facilities for the training of returning medical officers will be continued. Information received to date indicates that large numbers of places will be made available. A preliminary report of the findings will be published shortly.

The University of Texas Medical Branch, at Galveston, was removed from its probationary status.

The Bowman Gray School of Medicine, at Winston-Salem, N C, was transferred to the list of medical schools approved by the Council for the full four year course. This school has been an approved school of the basic medical sciences.

The following internships and residencies were approved by the Council:

## Hospitals Approved for Internships

Lutheran Hospital, Fort Wayne Ind  
St. Joseph Hospital, Fort Wayne Ind  
Flint Goodrich Hospital, New Orleans  
St. Joseph's Mercy Hospital, Ann Arbor, Mich  
Memorial Hospital, New York City  
Easton Hospital, Easton, Pa  
Hospital of St. Vincent de Paul, Norfolk, Va

## Anesthesiology

## Approved Residencies

Mount Sinai Hospital, New York City  
Temple University Hospital, Philadelphia

## Internal Medicine

Chesapeake and Ohio Hospital, Huntington, W Va  
Gouverneur Hospital, New York City  
Hospital of the Woman's Medical College, Philadelphia

## Mixed Residencies

Wyandotte General Hospital, Wyandotte, Mich  
Wyoming County Community Hospital, Warsaw, N Y  
Mercy Hospital, Charlotte, N C  
Grace Hospital, Cleveland  
Woman's Hospital, Cleveland

## Neurosurgery

University of Virginia Hospital, Charlottesville, Va

## Otolaryngology

Hospital of the Protestant Episcopal Church, Philadelphia

## Surgery

St. Mary's Hospital, San Francisco  
Charles Godwin Jennings Hospital, Detroit  
Gouverneur Hospital, New York City  
Hospital of the Protestant Episcopal Church, Philadelphia  
Johnston Willis Hospital, Richmond, Va  
St. Luke's Hospital, Milwaukee.

## Tuberculosis

Lake County Tuberculosis Sanatorium, Waukegan, Ill  
Hamilton County Tuberculosis Sanatorium, Cincinnati

## Schools for Clinical Laboratory Technicians Approved

Jefferson Hospital, Birmingham, Ala  
St. Francis Hospital, Evanston, Ill  
Salem Hospital, Salem, Mass  
University Hospital, Ann Arbor, Mich  
St. Anthony's Hospital, St. Louis  
Newark City Hospital, Newark, N J  
Presbyterian Hospital, Newark, N J  
Philadelphia General Hospital, Philadelphia  
St. Agnes Hospital, Philadelphia  
Medical and Surgical Memorial Hospital, San Antonio, Texas  
University of Vermont College of Medicine, Burlington, Vt

## School for Physical Therapy Technicians Approved

Duke Hospital, Durham, N C

## School of Occupational Therapy Approved

Richmond Professional Institute, Richmond, Va.

## School for Medical Record Librarians Approved

Mercy College, Detroit

VICTOR JOHNSON, M D, Secretary

## THE 1944 CHICAGO SESSION

## The Scientific Exhibit

The Scientific Exhibit will be held on the fourth floor of the Palmer House in the Exhibition Hall and adjoining spaces. The Board of Trustees has authorized three special exhibits on fractures, burns and the newer anti-infective agents. Other features will include groups of exhibits on heart disease, tropical medicine, industrial health and poliomyelitis.

Representatives to the Scientific Exhibit have been appointed by each section of the Scientific Assembly and they are already at work to make the Scientific Exhibit a noteworthy demonstration in graduate medical instruction.

Application blanks for space may be obtained by writing to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago 10, Ill.

## MEDICAL LEGISLATION

## MEDICAL BILLS IN CONGRESS

*Change in Status*—Subcommittee No 2 of the House Committee on the Judiciary held public hearings, November 10, on H R 786, the Tolan bill to permit chiropractors to treat the beneficiaries of the United States Employees' Compensation Act. Dr Barney J. Hein of Toledo, Ohio, and Dr Wilburt C. Davison, dean, Duke University School of Medicine, appeared as witnesses for and at the request of the American Medical Association in opposition to the enactment of the bill. Representative A. L. Miller of Nebraska, a doctor of medicine and a former health officer of his state, also protested against the bill, the protest being lodged at the request of the Nebraska State Medical Association.

*Bills Introduced*—S 1506, introduced, by request, by Senator Clark, Missouri, provides for further rehabilitation of honorably

discharged World War II veterans. S 1507, introduced, by request, by Senator Clark, Missouri, and H R 3634, introduced by Representative Rankin, Mississippi, propose to make further provision for the education of honorably discharged World War II veterans.

S 1509, introduced by Senator Thomas, Utah, provides for the education and training of members of the armed forces and the merchant marine after their discharge or conclusion of service.

## DISTRICT OF COLUMBIA

*Bill Introduced*—H R 3619, introduced by Representative Randolph, West Virginia, proposes to amend the existing law regulating the disposal of dead human bodies in the District of Columbia.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Dr William Dock Named Professor of Medicine**—Dr William Dock, since 1940 professor of pathology at Cornell University Medical College, New York has been appointed professor and chairman of the department of medicine at the University of Southern California School of Medicine Los Angeles. Prior to joining the Cornell faculty, Dr Dock was assistant professor of medicine at Stanford University School of Medicine and later professor of pathology.

**Typhoid Grandmothers**—The Los Angeles City Health Department has reported recently that, of 21 cases of typhoid reported to that department in the last sixteen months, 11 have been traced definitely to carriers according to *California's Health*. In 10 of these 11 cases, the infection had been acquired from grandmothers. It is suggested that several factors may be involved (1) that these grandmothers lived through a period in which typhoid was rampant in the United States, (2) that grandmothers are frequently active in the preparation of food in the home and (3) that they lived in a day and age when sanitation was not considered of as great importance as it is considered today. It is known that about 2 per cent of persons who have typhoid become permanent carriers. In the course of the department's investigation it was found that a 68 year old grandmother who had typhoid at the age of 17 was responsible for 4 cases of the disease that appeared within her immediate family during the last forty years, 1 of which resulted fatally.

### GEORGIA

**Personal**—Dr Young H. Yarbrough, assistant superintendent of the Milledgeville State Hospital, Milledgeville, has been appointed medical superintendent to succeed Dr Lovick P. Longino, effective September 1. The latter who has been connected with the hospital since 1906, resigned because of ill health.

### ILLINOIS

**License Restored**—The Illinois State Board of Registration in Medicine has restored the license to practice medicine in Illinois of Dr Delbert R. Blender, Chicago. Dr Blender's license had been revoked on June 22.

#### Chicago

**Annual Meeting of Institute of Medicine**—The twenty-eighth annual meeting of the Institute of Medicine of Chicago will be held at the Palmer House, December 7. Dr Frederick B. Noyes will deliver the presidential address on "Personal Recollections of a Leader, Greene Vardiman Black. His Development and Influence."

**Changes in the Faculty at Loyola**—George F. Simmons, Ph.D., and Arthur J. Gatz, Ph.D., are among the new appointments to the Loyola University School of Medicine. Promotions at the school include:

David S. Jones, Ph.D. to assistant professor of anatomy.  
Dr John L. Keeley to associate clinical professor of surgery.  
Dr Mary C. Patras to assistant professor of physiology.  
Dr George A. Hellmuth to assistant clinical professor of medicine.  
Dr Leo A. Kaplan to assistant clinical professor in neurology and psychiatry.

**Alumni Election**—On November 4 Dr Howard B. Carroll was reelected president of the Northwestern University Medical Alumni Association for the third term. Other officers are Drs Clarence G. Shearon, vice president in charge of foundation and century plan; Frederick W. Merrifield, vice president in charge of activities; Sumner L. S. Koch, vice president in charge of achievement; Everett C. Moulton, Fort Smith, Ark., vice president in charge of placements; Samuel C. Stanton, Hinsdale, Ill., statistician; and Harold E. Davis, secretary and treasurer.

**Dr Piszczek Surveys Poliomyelitis Epidemic Areas**—At the request of the National Foundation for Infantile Paralysis, Dr Edward A. Piszczek, director of the Cook County Public Health Unit, started on November 1 to survey the states included in the recent poliomyelitis epidemic areas. The purpose of the survey is to observe the treatments and treatment facilities in the various areas with the objective it is reported of standardizing the treatment. The states which Dr Piszczek will visit include Kansas, Colorado, Utah, Washington, Oregon, California, Arizona, Texas, Oklahoma and Arkansas.

### KENTUCKY

**First Annual Meeting on Mental Hygiene**—The Kentucky Mental Hygiene Association held its first annual meeting in Louisville on November 19. On September 25 the society held the first statewide mental hygiene meeting in Kentucky, also in Louisville, at which Dr Edward E. Landis, associate professor of psychiatry, University of Louisville School of Medicine, discussed a general mental hygiene program and emphasized the importance of public and private organizations working together and the collaboration between educational, professional and religious groups. Other speakers on the program included W. A. Frost, state commissioner of welfare; Dr S. Spafford Ackery, director of the mental hygiene clinic, Louisville; Dr Addie M. Lyon, Frankfort, director of the state division of hospitals and mental hygiene; and Dr Isham Kimbell, superintendent of the Central State Hospital, Lakeland. Rev. George J. O'Bryan, chaplain of St. Joseph Hospital, Lexington, is president of the state mental hygiene association. Since the organization of the state group, seven counties have already become represented in its membership. Fayette County has organized the first county unit with headquarters in Lexington, Jefferson County, which has the largest population of any Kentucky county, has a representation of 23 members, who contemplate early organization of a unit in Louisville. The Kentucky Mental Hygiene Association was organized in response to a request made by Dr Lyon in his address before the Kentucky Psychiatric Association in Louisville in January 1942, in which he emphasized the need for a mental hygiene association that would extend into every section of the state with a program that could be adapted to the needs and resources of the varying communities. Membership in the association is composed of lay and professional persons who are interested in promoting mental health. There are three classifications of members: active members who pay an annual membership fee of \$1.50 (50 cents of which is returned to the county unit), patron members who contribute \$100 or more, and honorary membership, conferred by a two-thirds vote of the membership. All members enrolling within the first twelve months are charter members.

### MARYLAND

**Fifty Years of Medicine at Johns Hopkins**—On October 2 Johns Hopkins University School of Medicine, Baltimore, observed its fiftieth anniversary. In view of the war no formal exercises were held to celebrate the event, instead a booklet was published and distributed to graduates and friends of the school as a memento of the occasion. The booklet contains a brief account of the founding of the school and its achievements during the last fifty years and photographs of illustrious physicians and scientists present and former members of the staff, who participated in the school's progress. It discusses the development of the various departments individually and the scope of the school as a whole, pointing out that the opening of the medical school marked a new departure in medical education in America because it was the first medical school in this country to open with all its professors in the preclinical branches on a full time or university basis.

### MICHIGAN

**University Awards Kellogg Prize**—Dr Henry E. C. Everett, a member of the 1943 graduating class, University of Michigan Medical School, Ann Arbor, was recently presented with the Kellogg Medical Prize for highest scholastic achievement. Dr Everett will serve his internship at the City Hospital, Cleveland.

**Physicians Required at High School Football Games**—The Detroit Board of Education requests attendance of a physician at every high school football game. Compensation has been provided and a schedule has been set up. The need for physicians at these games was published in the form of a request in the *Detroit Medical News*.

**Special Meeting to Discuss Wagner-Murray-Dingell Bill**—The Wayne County Medical Society has called a special meeting for November 29 to discuss the Wagner-Murray-Dingell legislation. The students of Wayne University College of Medicine, Detroit, have been invited to attend the meeting as well as intern and resident staffs of local hospitals.

**State Medical Board Changes**—Dr Elmer W. Schnoor, Grand Rapids, was elected president of the Michigan State Board of Registration in Medicine for a third term at an annual meeting of the board in Lansing. Dr David C. Eisele, Ironwood, has been named a member of the board to succeed Dr Andrew C. Roche, Calumet, for a four year term expiring Sept. 30, 1947.



## NEW JERSEY

**Emergency Hospital Unit Created**—The second public health unit in the program to organize affiliated hospital units of the Emergency Medical Service of the U S Office of Civilian Defense was established at the Newark Beth Israel Hospital recently. The first unit was created in the Albany Hospital, Albany, N Y. The project is under the auspices of the U S Public Health Service and covers the activation of physicians, men over 50 or those who were rejected for the armed forces, as a military unit in case of air raid emergency or in case the flow of wounded from the various theaters of war overtakes the regular medical corps staff. Under the setup the participating members receive commissions in the U S Public Health Service.

## NEW YORK

**Personal**—Dr Theodore G Klumpp, president of the Winthrop Chemical Company, Reusselaer, on November 3 received the honorary degree of doctor of science from the Philadelphia College of Pharmacy and Science in recognition of his "distinguished services in medicinal chemistry."

**Graduate Lecture**—The state medical society and the state department of health sponsored a graduate lecture on "Rheumatic Fever—Rheumatic Heart Disease" before the Jefferson County Medical Society, Watertown, November 11. The lecture was given by Dr John G Fred Hiss, professor of clinical medicine, Syracuse University College of Medicine, Syracuse.

## New York City

**Course in Occupational Dermatoses**—A lecture course on occupational dermatoses will be held at the New York Academy of Medicine, December 6-11, under the auspices of the dermatoses investigations section, division of industrial hygiene, National Institute of Health, Bethesda, Md, U S Public Health Service. Louis Schwartz, medical director, U S P H S, chief of the section on dermatoses investigation, and the following members of his staff will deliver the lectures: Samuel M Peck, senior surgeon, John E Dunn Jr, surgeon, James Q Gant Jr, surgeon, and Howard S Mason, associate chemist. James G Townsend, medical director, chief of the division of industrial hygiene, National Institute of Health, will deliver the opening address. All are of the U S P H S.

**Lectures to the Public**—The New York Academy of Medicine started its ninth series of lectures to the public on November 18 with the presentation of the Linsly R Williams Memorial Lecture by Sir Gerald Campbell, British minister and special assistant to the British ambassador, on "Effect of Science on Human Beings." Other lectures in the series are:

- Lieut Col Thomas T Mackie, M C, A U S, Epidemics and War, December 14.
- Charles Glen King, Ph D, New York. The Ninety Fourth Anniversary Discourse of the New York Academy of Medicine Food and Civilization January 27.
- Dr Reginald Fitz, Boston, Medicine and the Changing World, February 24.
- Dr Colin M MacLeod, New York, The Past, Present and Future of Chemotherapy, March 23.
- Dr Edward A Strecker, Philadelphia, the George R Siedenburg Memorial Lecture, Have We Averted the Rule of King Mob? April 27.

**Clement Cleveland Award Goes to Frederick Hoffman**—On November 2 the Clement Cleveland Award for 1943 was awarded in absentia to Frederick L Hoffman, LL D, San Diego, for many years consulting statistician and a third vice president for the Prudential Life Insurance Company, Newark, N J. The medal, which is presented for "outstanding service in the cause of cancer control," was received for Dr Hoffman by Dr Howard C Taylor, who in his acceptance address stemmed the beginning of the national society to a paper read by Dr Hoffman on May 7, 1913 at a meeting of the American Gynecological Society. An exhibit at the meeting also credits Dr Hoffman with the development of this movement. The annual dinner of the New York Cancer Committee was given this year in honor of the founders of the American Society for the Control of Cancer. The speakers included Clarence C Little, Sc D, managing director, who reviewed the national organization's history.

**New City Division of Nutrition**—The New York City Department of Health has created a new division of nutrition and appointed eight nutritionists to supervise the intensified nutritional program of the health department which has been necessitated by the war and current food shortages. Mrs Gertrude Gates Mudge has been named supervising nutritionist. According to Dr Ernest L Stebbins, city health commissioner, one of the projects to be conducted will be the development of a staff education program for physicians and nurses in the health department. Specialized nutrition instruction will be provided with emphasis on timely food information which the

physicians and public health nurses can pass on to their patients and to persons with whom they come in contact during their professional visits. Working through the health department's district health centers, the nutritionists will also cooperate with public and private social and welfare agencies and the New York City food and nutrition program in the development of neighborhood programs throughout the city.

## OHIO

**One Hundred Years of Medicine**—The Cleveland Health Museum has given over its entire second floor to an exhibit reviewing the last hundred years of medicine in Cleveland as a part of the centennial celebration of Western Reserve University School of Medicine. Dr Howard Dittrick, director of the museum of historical medicine of the Cleveland Medical Library Association, is in charge of the display. Instruments, books, fee bills and documents of the country doctor of a hundred years ago feature the exhibit. A preview was held on October 26 under the sponsorship of the Western Reserve Historical Society, the Museum of Historical Medicine of the Cleveland Medical Library Association and the Cleveland Health Museum. Chauncey D Leake, Ph D, dean of the University of Texas Medical Branch, Galveston, spoke on "Milestones in Medicine." The office of a Cleveland doctor, Abner Webb, 1846, is reconstructed with the help of old letters and prints, and with many of his own furnishings. A news item announcing the centennial program appeared in *THE JOURNAL*, October 16, page 430.

## OKLAHOMA

**Portrait of Dr Garabedian**—A portrait of the late Dr G A Z Garabedian has been presented to the Tulsa County Medical Library by Mrs Garabedian. The work was executed by Diane Travis and recently was hung at Hillcrest Hospital. An endowment fund bearing the name of the late physician was established shortly after his death in 1938 by Mrs Garabedian.

**The Annual Leroy Long Lecture**—Dr Harry L Alexander, professor of clinical medicine, Washington University School of Medicine, St Louis, presented the fourth annual Leroy Long Memorial Lecture at the University of Oklahoma School of Medicine, Oklahoma City, recently on "The Present Status of Chemotherapy in the Treatment of Diseases." The lecture is sponsored by the alumni and undergraduates of Phi Beta Psi as a memorial to the late Dr Leroy Long, Oklahoma City, dean of the medical school from 1915 to 1931.

## OREGON

**Meeting on Poliomyelitis**—The University of Oregon Medical School, Portland, and the Multnomah County Chapter for Infantile Paralysis recently held a symposium on the newer concepts of the management of poliomyelitis. The course was designed to help in handling existing cases. Only basic data were presented. Speakers included Mr E T Hedlund, postmaster, and Drs Adolph Weinzirl, Paul V Woolley Jr, Lawrence Noall and Lewis D Clark.

## PENNSYLVANIA

**Physician Observes Ninety-Third Birthday**—Dr George B Woods, Washington, celebrated his ninety-third birthday, September 7. For the past sixty-nine years Dr Woods has practiced in Washington County and for more than thirty years has been physician to the Washington County Home and Poor Farm, a position he still holds, having given up all other practice.

**State Psychiatric Meeting**—Dr George W Smeltz, Pittsburgh, was named president-elect of the Pennsylvania Psychiatric Society at its fifth annual dinner meeting in Philadelphia, October 7, and Dr Ralph L Hill, Wernersville, was installed as president. Dr Le Roy M A Maeder, 206 South 13th Street, Philadelphia 7, is the secretary-treasurer. Speakers included Mr John Corcoran, radio commentator and writer, who discussed "Today," and Dr Oliver Spurgeon English, Philadelphia, "The Referral Center for Selective Service in Philadelphia."

## Philadelphia

**The Pancoast Lecture**—Dr Dallas B Phemister, Thomas D Jones professor of surgery, University of Chicago School of Medicine, delivered the annual Pancoast Lecture of the Philadelphia Roentgen Ray Society, November 4, on "Disturbances Arising from Interruption of Circulation in the Skeletal System." The lectureship was established in 1941 in honor of the late Dr Henry K. Pancoast, professor of radiology at the University of Pennsylvania School of Medicine.

**Trust Fund for Needy Patients Established**—William H. Donner, retired industrialist, has given a \$400,000 trust fund to the University of Pennsylvania to establish the Donner Fund for Needy Patients. The income from the fund will be used to extend to needy patients special facilities additional to those normally supplied by the hospital. Part of the income may be used for assistance in clinical research problems and for special experiments in those aspects of hospital administration that have to do principally with the welfare of patients. Surveys may be conducted, investigations of routine practices made and further special training of personnel undertaken, including grants to graduate fellows in nursing, and for trial periods, new administrative procedures that have direct bearing on the welfare of the patients may be developed. The specific objective of the fund is to assist needy patients who require extraordinary services not usually supplied by a hospital. Mr. Donner gave \$2,000,000 in 1932 to found the International Cancer Research Foundation, Philadelphia.

**Professorship of Medicine to Be Created**—The Frank Wister Thomas Professorship of Medicine is to be established at the University of Pennsylvania School of Medicine under the will of Mrs. Maria G. B. Thomas of Philadelphia, who died on September 15, according to the *Pennsylvania Medical Journal*. The professorship will be a memorial to Mrs. Thomas's husband, Dr. Frank W. Thomas, who died on Jan. 19, 1928. According to the will, most of the \$200,000 estate is left ultimately to create the new chair. The residue is bequeathed to the university toward the endowment, and trust funds amounting to \$50,000 will be added to it as the beneficiaries die, until \$200,000 is accumulated. The holder of the professorship shall be the person who is recognized by the trustees as the head or chief professor of medicine at the medical school. If the endowment exceeds the amount necessary to establish the professorship, or if the chair becomes temporarily vacant, one or more temporary Frank Wister Thomas fellowships in medicine are to be set up. Any excess over the \$200,000 limit fixed for the professorship is bequeathed to Germantown Dispensary and Hospital.

### SOUTH CAROLINA

**State Venereal Hospitals to Be Relocated**—Relocation of two of the state's three venereal disease hospitals to place all closer to Columbia was announced in newspaper reports recently. The Pontiac quarantine hospital for white women will be moved to Camp Victory, about 12 miles from Columbia, and the hospital for Negro women at Goldville will be moved to the old Pontiac site. The third hospital at the state prison for women will remain unchanged. The move was to be made during October.

### TENNESSEE

**Memorial Health Unit Established**—Dr. Warren C. Ramer, Lexington, has been placed in charge of the Blanche Bomer Morgan Memorial Health unit in Haywood County, dividing his time between this unit and those in Lauderdale and Tipton counties. The Blanche Bomer Memorial Unit was established in Brownsville through the offer of L. W. Morgan to contribute \$2,000 a year for a period of five years in memory of the late Mrs. Morgan, who had been interested in health education, particularly the campaign against tuberculosis. The unit's first public function was a tuberculosis clinic.

### VIRGINIA

**Graduate Course**—The Virginia Society of Ophthalmology and Otolaryngology will sponsor its tenth annual postgraduate course, December 7-10, in the Baruch Auditorium of the Medical College of Virginia, Richmond. Among the speakers will be Drs. Oscar V. Batson, Philadelphia; Leroy A. Schall, Boston; Henry B. Orton, Newark, N. J.; Warren T. Vaughan, Richmond; John A. Kolmer, Philadelphia; Ferris Smith, Grand Rapids, Mich.; John J. Shea, Memphis, Tenn.; Edmund B. Smith, Philadelphia; Peter C. Kronfeld, Chicago; Algernon B. Reese, New York; Ramon Castroviejo, New York; and Theodore L. Terry, Boston.

**State Hospital Physicians Win Research Awards**—First prize of \$225 in the annual competition inaugurated early this year by the Virginia State Hospital Board went to Drs. Isadore S. Zfass and Walther Reese of the Eastern State Hospital, Williamsburg, for their Preliminary Report of the Study of 200 Autopsy Cases at the Eastern State Hospital with Special Emphasis on Neuropathology and Brain Tumor in Old Age. Dr. Simon Cohen, Central State Hospital, Petersburg, received \$125 for his 'Analysis of the Negro Criminal Insane in Virginia.' Dr. Vincent L. Lacey, Central State Hospital, received

\$50 for his work on "Neurosyphilis with a Two Year Observation of the Comparative Therapeutic Effects of Inoculation Malaria and Artificial Fever Therapy." The state hospital board made the awards at its October 14 meeting. The prize winners were rated according to their merit by Dr. Winfred Overholser, St. Elizabeths Hospital, Washington, D. C. Early this year the state hospital board arranged to make financial prizes available annually to stimulate interest in professional work among physicians on the staffs of the state hospitals exclusive of the superintendents. The prizes are given for original or meritorious papers, based preferably on observations of patients under the physicians' care (*THE JOURNAL*, February 27 p. 693). The competitive papers need not necessarily deal entirely with the clinical or laboratory features but may cover reclassification and deductions that have not heretofore been made.

**Seaboard Medical Association Meeting**—The forty-eighth annual session of the Seaboard Medical Association of Virginia and North Carolina will be held at Richmond, Va., November 30 to December 2, with headquarters at the Jefferson Hotel, under the presidency of Dr. Charles Lydon Harrell, Norfolk, Va. A preliminary program includes as speakers, Gov. Colgate W. Darden Jr., Richmond, and the following:

Ben Jones, American Red Cross, Camp Lee, Va., Red Cross Activities at Home and Abroad.  
Dr. Antonio A. Burke, Norfolk, Remarks on Nasal Sinus Disease.  
Dr. Vernon D. Offutt, Kingston, N. C., Diagnosis and Treatment of Virus Pneumonia.  
Dr. Eugene L. Lowenberg, Norfolk, Eczema and Dermatitis of the Female Genitalia.  
Drs. Keith S. Grimson and Gameel B. Hodge, Durham, Intestinal Obstruction.  
Dr. Jacques P. Gray, Richmond, Medical Education in Wartime.  
Dr. Malory A. Pittman, Wilson, N. C., Penicillin in the Treatment of Osteomyelitis and Other Inflammations.  
Dr. Donnell B. Cobb, Goldsboro, N. C., Simple Method of Fracture Fixation.  
Dr. James Morrison Hutcheson, Richmond, Medicolegal Aspects of Coronary Thrombosis.  
Dr. Randolph B. Grinnan Jr., Norfolk, Skin Manifestations of Sulfa thiazole Intoxication.  
Drs. Russell A. L. Buxton, Waverly, R. Payne and Morris B. Beechcroft, Newport News, Va., Fake Negative Results in the Aschheim Zondek Test.  
Dr. Harry Hudnall Ware Jr., Richmond, Ectopic Pregnancy.  
Dr. Charles J. Andrews, Norfolk, The Maternal Mortality Situation.

The meeting will also include a symposium on "Diarrhea" with the following members of the faculty of the Medical College of Virginia, Richmond, as speakers: Drs. John H. Scherer on 'Bacillary Dysentery Amebiasis'; Lee E. Sutton Jr., 'Acute Gastroenteritis in Children'; Thomas Dewey Davis, 'Diarrhea Associated with Organic Disease of the Colon'; and Maxwell Berry Jr., 'Diarrhea Associated with Functional Diseases'.

### WEST VIRGINIA

**Personal**—Dr. Walter E. Vest, Huntington, was reelected president for a fourth term of the public health council of West Virginia at its meeting in Charleston, October 26. Dr. Vest has served continuously as president of the council since 1935. —E. J. Hall, Buckhannon, educator, has been named as educational consultant in venereal diseases in the state department of health.

**Appointments as Health Officers**—Dr. James E. Coleman, Fayetteville, has been appointed by the public health council as full time health officer of Fayette County. The council also appointed the following physicians among others as part time health officers:

Dr. Harry K. Owens, Elkins.  
Dr. James K. Pickens, Jaeger.  
Dr. Roscoe Stoltz, Kenova.  
Dr. Bayard L. Liggett, Mill Creek.  
Dr. James A. Newcome, Keever, Mineral County.  
Dr. Ona F. Mitchell, Franklin, Pendleton County.

**Venereal Treatment Center**—A medical center for the treatment of venereal diseases will be opened in an abandoned National Youth Administration training center, South Charleston, to accommodate about 350 patients. A medical clinic with 35 beds will be attached and facilities for a limited amount of occupational training will be provided. Funds for the transportation, hospitalization and treatment of patients will be provided by the U. S. Public Health Service, which will also provide a medical staff for the institution. Under the provisions of an act passed at the 1943 session of the West Virginia legislature, local health officers are authorized to commit to the institution persons who refuse to submit to treatment in their local communities, but admission will also be authorized on a voluntary basis. The so-called fast treatment will be used at the center consisting of a maximum of thirty days for syphilis and fifteen days for gonorrhea.

## GENERAL

**Meeting on Radiology**—The Radiological Society of North America will hold a business session at the Drake Hotel, Chicago, December 1-2. There will be no scientific sessions, exhibits or refresher courses. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse 2, N. Y., is secretary-treasurer.

**Anesthetists Convene**—The American Society of Anesthetists will hold its annual meeting at the New York Academy of Medicine, New York, December 9, under the presidency of Dr. Emery A. Rovenstine, New York. The speakers will include Drs. Edward J. Van Liere, Morgantown, W. Va., on "The Role of Anoxia in Gastrointestinal Effects of Anesthesia" and Stuart C. Cullen, Iowa City, "Clinical and Laboratory Observations on the Use of Curare for Muscular Relaxation During Inhalation Anesthesia."

**American Review of Soviet Medicine**—The American-Soviet Medical Society for the Exchange of Medical Information has issued the first number of its official organ, *American Review of Soviet Medicine*. In a foreword, Dr. Walter B. Cannon stresses that, while many leaders of Soviet medicine can read English medical literature, few English-speaking physicians are familiar with the Russian language. Consequently, Soviet medical publications have little circulation in the English-speaking nations and little is known of the progress in the theory and the practice of medicine and surgery in the Soviet Union. As a remedy for this defect, the *American Review of Soviet Medicine* is being issued. The publication will contain translations of important papers from the Russian, survey articles written by American experts on various aspects of Soviet medicine, news of current medical events in the U. S. S. R., reviews of Soviet medical books and abstracts from Soviet medical periodicals. The publication will appear bimonthly under the editorship of Dr. Henry E. Sigerist.

**Latin American Physicians Study Health Education**—Eight Latin American physicians traveling in the United States under the auspices of the Pan American Sanitary Bureau visited the American Medical Association headquarters in Chicago, November 6-9. Their program in Chicago was arranged cooperatively by the American Medical Association and the American College of Surgeons, including visits at the headquarters of both organizations and opportunities to observe hospital work, medical education and, particularly, health education. The physicians, together with the seven Latin American republics which they represented, were as follows:

Dr. Jesuino Albuquerque, commissioner of public health of the federal district, Rio de Janeiro, Brazil.

Dr. Aberlardo Marinho, director of health education, Rio de Janeiro, Brazil.

Dr. Francisco Sequeira, chief, health education, San Salvador, El Salvador.

Dr. Epaminondas Quintrana, chief, health education division, Guatemala.

Dr. Alfonso Segura Albitier, director, Morales Hospital, Mexico City, Mexico.

Dr. Carlos Amara, chief, health education, Managua, Nicaragua.

Dr. Raul Peña, chief, public health education, Asuncion, Paraguay.

Dr. M. Lares Gabaldon, chief, division of health education and publications, Caracas, Venezuela.

**Special Society Elections**—Dr. Albert C. Furstenberg, Ann Arbor, Mich., was chosen president-elect of the Association of American Medical Colleges at its annual meeting in Detroit recently and Dr. Ewen M. MacEwen, Iowa City, was installed as president. Philip A. Shaffer, Ph.D., St. Louis, is the vice president, Dr. Arthur C. Bachmeyer, Chicago, treasurer, and Dr. Fred C. Zapffe, Chicago, secretary. The 1944 meeting will be held in Detroit at the Statler Hotel, October 23-25. Dr. Gordon B. New, Rochester, Minn., was chosen president-elect of the American Academy of Ophthalmology and Otolaryngology at its annual meeting in Chicago, October 10-13, and Dr. Lawrence T. Post, St. Louis, was inducted into the presidency. Vice presidents are Drs. C. Stewart Nash, Rochester, N. Y., Harold F. Whalman, Los Angeles, and Chevalier L. Jackson, Philadelphia. Dr. William L. Benedict, Rochester, Minn., is the executive secretary-treasurer. Other secretaries are Drs. Oliver E. Van Alyea, Chicago, for otolaryngology, Algernon B. Reese, New York, for ophthalmology, Albert D. Ruedemann, Cleveland, for instruction-ophthalmology, Dean M. Liele, Iowa City, for instruction-otolaryngology and maxillofacial surgery, Erling W. Hansen, Minneapolis, for public relations and Harry S. Gradle, Chicago, for home study courses.

**Finney-Howell Research Foundation Fellowships**—Announcement has been made by the Finney-Howell Research Foundation, Inc., that all applications for fellowships for next year must be filed in the office of the foundation, 1211 Cathedral Street, Baltimore, by Jan. 1, 1944. Applications received after that date cannot be considered for 1944 awards, which will be made the first of March 1944. This foundation was provided

for in the will of the late Dr. George Walker, Baltimore, for the support of "research work into the cause or causes and the treatment of cancer." The will directed that the surplus income from the assets of the foundation together with the principal sum should be expended within a period of ten years to support a number of fellowships in cancer research, each with an annual stipend of \$2,000, "in such universities, laboratories and other institutions, wherever situated, as may be approved by the board of directors." Fellowships carrying an annual stipend of \$2,000 are awarded for the period of one year, with the possibility of renewal up to three years, when deemed wise by the board of directors, special grants of limited sums may be made to support the work carried on under a fellowship. Applications must be made on the blank form which will be furnished by the secretary, Dr. William R. Fisher, Baltimore, or any member of the board of directors.

**Lowest Death Rate Recorded for First War Year—**

The death rate for 1942, the first year of United States participation in the war, was 10.4 per thousand of population, according to a report issued by the Bureau of the Census, Department of Commerce. This rate was slightly lower than the rate of 10.5 per thousand of population in 1941 and was the lowest ever recorded for the United States. Despite the decrease in the total death rate there was an increase in the rate for certain causes of death such as heart diseases, cancer and intracranial lesions of vascular origin. Most of the increase occurred in the diseases characteristic of old age. Cancer claimed 163,400 lives in the United States last year, 3,474 more than in 1941. Substantial reductions in the death rate were recorded for pneumonia and influenza and motor vehicle accidents. The ten leading causes of death and their death rates per hundred thousand of population in 1942 as compared with their rates in 1941 were as follows:

	1942	1941
1 Diseases of the heart	295.2	290.1
2 Cancer and other malignant tumors	122.1	120.2
3 Intracranial lesions of vascular origin	92.4	89.1
4 Nephritis	70.2	75.1
5 Pneumonia and influenza	55.7	63.9
6 Tuberculosis	43.1	44.5
7 Premature birth	25.8	25.1
8 Diabetes mellitus	25.4	25.5
9 Motor vehicle accidents	21.2	30.0
10 Syphilis	12.2	13.3

**Southern Surgical Association**—The annual meeting of the Southern Surgical Association will be held at the Roosevelt Hotel, New Orleans, December 7-9, under the presidency of Dr. Barney Brooks, Nashville, Tenn. Included among the speakers will be:

Drs. Alfred Blalock and Edwards A. Park, Baltimore. The Surgical Treatment of Experimental Coarctation (Atresia) of the Aorta.  
Col. Daniel L. R. Borden, M. R. C. A. S. A. U. S., and Dr. Frank Lieut. Col. James Barrett Brown, M. C., A. U. S., and Dr. Frank McDowell, St. Louis. Neck Dissection for Carcinoma.  
Lieut. Col. Burr N. Carlier and Major Michael E. DeBakey, M. C., A. U. S. Current Trends in Military Surgery.  
Dr. Warren H. Cole and Lewis J. Rossiter, A. B. Chicago. Chronic Cystic Mastitis.  
Col. Bradley L. Coley and Major George F. Wollgast, M. C., A. U. S., Penicillin Therapy in an Army Hospital.  
Lieut. Col. Loyal Davis, M. C., A. U. S., Major John E. Scarff, M. R. C. Major Neil C. Rogers, M. C., A. U. S., and Lieut. Meredith Dickinson, M. R. C. High Altitude Frostbite.  
Drs. William L. Estes Jr. and Belton A. Bennett Jr., Bethlehem, Pa. The Problem of Perforation in Peptic Ulcer with a Report of End Results.  
Dr. Charles G. Heyd, New York, Voice Disabilities Following Thyroid Surgery.  
Drs. Frank H. Lahey and Samuel T. Marshall, Boston. Indications for and Experiences with Total Gastrectomy.  
Dr. Rudolph Matas, New Orleans. Personal Experiences in the Surgical Treatment of Aneurysms of the Lower Extremities. Lantern Slide Exhibit with Special Reference to the Methods of Intracapsular Suture (Endo-Aneurysmorrhaphy).  
Drs. John J. Morton Jr. and William J. Merle Scott, Rochester, N. Y., Ligation of the Abdominal Aorta for Dissecting Aneurysm of the Left Common Iliac.  
Dr. Joseph Garland Sherrill, Louisville. Poliomyelitis and Allied Lesions of the Cord and Meninges.  
Drs. Nathan A. Womack, St. Louis, and Heinz E. Haffner, El Paso, Texas. Cholesterolemia: Its Significance in Badly Damaged Gall bladders.

**Conference of Professors of Preventive Medicine—**

The first annual meeting of the Conference of Professors of Preventive Medicine was held in New York, October 11. In a discussion of "New Responsibilities and Opportunities for Departments of Preventive Medicine and Public Health," Dr. Harold W. Brown, dean of the School of Public Health, University of North Carolina, Chapel Hill, and Dr. Jean A. Curran, dean, Long Island College of Medicine, Brooklyn, spoke on "Tropical Medicine," Lieut. Col. Arthur P. Hitchens, M. C., U. S. Army, retired, and Leland W. Parr, Ph.D., Washington, D. C., on "The Military Emergency in General and the Pre-

ence in Medical Schools of A S T (Army) and V12S (Navy) Programs in Particular' and Dr Roscoe R Spencer, chief, National Cancer Institute, Bethesda, Md., "Social and Economic Factors as They Influence Disease Production and Health Promotion." A round table on objectives and methods in the teaching of preventive medicine and public health was also held. The Conference of Professors of Preventive Medicine was organized in St Louis Oct 30, 1942. It is an informal organization of the men and women who teach preventive medicine in the approved schools of the United States and Canada and aims to promote the better teaching of the specialty through the bringing together of those who do the teaching and the discussion of problems which arise in that teaching. Dr Wilson G Smilie, New York, is president and Dr Parr secretary.

### CANADA

**Institute of Psychiatry Created at McGill**—The Allan Memorial Institute of Psychiatry has been established at McGill University, Montreal, Quebec. The new institute a 50 bed hospital which will become the teaching center of a newly organized department of psychiatry in the university's medical school will be housed in 'Ravenscrag' formerly the home of Sir H Montagu and Lady Allan who presented it to the Royal Victoria Hospital, Montreal. The accommodations will be for patients suffering from early and acute psychiatric conditions. Facilities for intensive treatment are being set up. The project will include laboratories to accommodate the development of research and treatment which are the principal objectives. According to the *American Journal of Psychiatry* the Rockefeller Foundation has made a grant of \$150,000 over an initial five year period to develop the teaching and research facilities of the institute. The provincial government of Quebec has authorized an annual appropriation of \$30,000 for twenty years for hospital maintenance costs, and Montreal citizens have contributed to the project. Dr D Ewen Cameron professor of neurology and psychiatry and director of the department at the Albany Medical College, Albany, N Y has been named in charge of the new department at McGill University Faculty of Medicine, serving as the first full professor of psychiatry there and psychiatrist in chief to the Royal Victoria Hospital. He will also be director of the new institute. Dr Cameron was born in Bridge of Allen Scotland, in 1901. He received his medical degree at the University of Glasgow in 1924. He served on the psychiatry staff of the Johns Hopkins Hospital Baltimore from 1926 to 1928, teaching during the latter year as an instructor in psychiatry at the medical school. Subsequently he served at the Burgholzli, Zurich, and at the Brandon Hospital for Mental Diseases, Brandon Manitoba returning in 1936 to become senior research psychiatrist for the Foundation of Neuro-Endocrine Research at the Worcester State Hospital, Mass. In 1938 he went to Albany Medical College.

### LATIN AMERICA

**Health Activities in Latin America**—The development of a quinine project is rapidly going forward in Colombia and providing work for hundreds of workers. The discovery of these quinine bearing trees dates back prior to 1878, when Jose Triana a Colombian botanist, through his researches discovered these trees in the Bucaramanga area a paper written by him was subsequently published in a French journal. A commission in 1917 made investigations, but steps were not taken to develop the quinine found there. In 1942 a commission sponsored by the U S Board of Economic Warfare, in collaboration with agencies of the other American republics sent a mission to Colombia in its program to discover additional hemisphere sources of quinine. It found a stand of trees extending over 700,000 acres just as Triana reported in his article more than fifty years ago.

**Tuberculosis Control**—Antituberculosis vaccine has been employed successfully for the first time in Colombia with serum donated by the republic of Venezuela. According to the Newsletter of the Health and Sanitation Division, Dr Edmundo Medina, chief of the department of epidemiology administered the vaccine for the first time in Bogota to 10 infants at the Maternity Hospital. In Ecuador four of the six pavilions originally planned for the tuberculosis hospital in Guaravilco are now finished except for a few details.

**Typhus Fever Work**—Serious outbreaks of typhus were reported during July near Coban Quezaltenango Totonicapan Solola and Tecpan. During 1942 89 cases of the disease were reported by the U S Public Health Service in Colombia. Surveys conducted by a combined U S Military and Naval Commission, formed in 1942 to study typhus show that the

disease was present in Bolivia, Chile, Colombia, Ecuador, El Salvador, Guatemala, Mexico, Panama, Peru and Venezuela. Complement fixation tests have proved its presence in Bolivia, Colombia, Ecuador, El Salvador, Guatemala and Peru.

**Personal**—Dr Thomas B Phinizy, formerly commissioner of public health for Richmond County, Augusta, Ga, is chief of the new field party in the Dominican Republic. Dr David Glusker, Yonkers, N Y, is the new chief of party in Costa Rica. A plaque was unveiled in the Faculty of Medicine of the University of Mexico, July 13, in honor of Dr Gonzalo Castañeda, first president of the Mexican Academy of Surgery, who has completed fifty years in the practice of medicine.

**New Construction**—A new hospital on the grounds of the Getulio Vargas Hostel at Alagadico in Fortaleza, Brazil, was recently completed. Dr Jose Borges de Sales is chief medical officer. The government of Guatemala has approved the construction of a three story 300 bed general hospital to be built on the site of the finca "Esperanza" in Guatemala City.

**Society News**—The conference of sanitary engineers on inter-American service and public health presided over by Dr Eugene P Campbell, regional director for Central America and Panama, was held in Managua, October 11-14. The first Pan American Physical Education Congress was held in Rio de Janeiro Brazil, July 19-31. The congress was set up on a permanent basis with a secretary in Peru under the auspices of the department of physical education of Peru. It was agreed to hold the next congress in Mexico City in 1945, according to the *Child*. Prof A M Barriga Villalba has been elected president of the recently established Sociedad de Biología. Other officers include Profs José Ignacio Chala and Kalman Mezey, vice presidents, Dr Luis Maria Murillo, treasurer and Prof J Hernando Ordóñez, general secretary. The official journal of the new group is *Anales* the first number of which recently made its appearance.

### FOREIGN

**Institute for Typhus Research**—The *British Medical Journal* reports that an institute for typhus research named after Emil A. von Behring, German bacteriologist, 1854-1917, has recently been opened in Lemberg. The journal announces also that a special typhus institute has been created in Dresden for the 'wholesale' preparation of typhus vaccine.

**American Award Goes to British Scientist**—The Grocery Manufacturers of America has given its 1943 annual award to Sir John Boyd Orr, LL.D, director of the Rowett Research Institute, Aberdeen, who according to *Science*, was largely responsible for improving the nutritive quality of the English diet in the face of wartime food shortages. The presentation ceremony was broadcast on November 4 over a two way transatlantic hookup by the Blue Network at a meeting of the association in New York. Sir John accepted the award over the air from England. He is a member of the advisory committee on nutrition of the Ministry of Health.

**International University Sanatorium Proposed**—Plans are under way to establish an International University Sanatorium in Switzerland under the auspices of international student organizations the International Union Against Tuberculosis the League of Red Cross Societies, the International Committee for Intellectual Cooperation and the European Rotary. Half a million Swiss francs have already been granted by the Swiss government to the project. The subscription of "founders' shares" at 25,000 Swiss francs each is now available, entitling subscribers to permanent ownership to one of the beds and membership in the governing body. A recent announcement indicated that 40 of the proposed 208 beds have been taken and that construction will start as soon as 100 shares have been subscribed. The idea for the institution stemmed from the success of the Swiss University Sanatorium in Leysin in the Vaudois Alps, which was opened in 1922 as a place where professors and students afflicted with tuberculosis could obtain the necessary treatment and carry on with some of their studies as well. Dr Louis Vautier director is the original sponsor of the project, which was supported by the Swiss universities and the Swiss Federal School of Technology.

### CORRECTION

**Evaluation of Albuminuria**—In paragraph 3 of the directions for determining the significance of albuminuria in *lectes* in the communication by Drs Derow and Stellar in *THE JOURNAL*, October 23 page 503 the word *supine* should have been used instead of *prone*.



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct 2, 1943

#### The Beveridge Plan

At the annual meeting of the British Medical Association the membership was stated to be 44,288, an increase of over 3,000 in the past nine months. The three day debate was devoted almost entirely to the Beveridge plan and the dominant note was hostile. The chairman, Mr. H. S. Sonttar, said that the medical profession was faced with the most important crisis in its history. The future of medicine in the new social epoch held vast possibilities, he said, but to bring them to fruition would demand wisdom, patience and not a little self sacrifice.

A medical planning commission was formed in May 1941, and its interim report met with gratifying approval. When members of the commission were about to formulate details, a thunderbolt was launched on them in the shape of the Beveridge report. Its proposals were for the most part admirable, the chairman stated, but when the government set out to give them effect a different situation arose. "Our axiom that first class medical service should be obtainable by every individual, whatever his economic status, is expanded into the proposition that no one is to pay for our services. Our desire to work together in groups is converted into regimented service under a local authority." As a result of discussions carried on with the Ministry of Health for four months there was reason to believe that the ministry's view had been greatly modified and were more likely to meet the approval of the profession.

The following resolution was carried by 200 votes to 10. That in the opinion of the representative body the creating of a full time salaried state medical service is not in the best interests of the community. A resolution to the effect that a comprehensive medical service should be available to all who need it, but that it is unnecessary for the state to provide for those who are willing and able to provide for themselves, was carried by 149 votes to 37.

A number of principles recommended by the committee which represented the medical profession in the conference with the minister of health were adopted. They included the following: 1 The system of medical service should be directed toward the achievement of positive health and the prevention of disease no less than toward the relief of sickness. 2 There should be available for every individual the services of a general practitioner or a family doctor of his own choice. Consultants, specialists and all necessary auxiliary services should be available normally through the family doctor. 3 The health of the people depends primarily on environmental conditions, such as adequate nutrition and security from fear and want. Improvement of means to satisfy these needs should precede or accompany any future organization of health services. 4 It is not in the public interest that the state should convert the medical profession into a salaried branch of central or local government service.

#### Laboratory Control of Enteric Fevers

At a meeting of the Fever Hospital Medical Service Group of the Society of Medical Officers of Health, Dr. A. Felix opened a discussion on recent advances in the laboratory control of typhoid and paratyphoid fevers. He referred to the finding of Craigie and Yen in 1938 that strains of the typhoid bacillus could be divided into types by their sensitiveness to specifically adapted anti V<sub>1</sub> bacteriophages. The results were as reliable as those obtained in streptococcal or pneumococcal infections with the established serologic tests. More recently

Felix and Callow had found that the bacteriophage technic could be applied to strains of the paratyphoid B bacillus. Anti V<sub>1</sub> phages of *Salmonella paratyphi* B could be adapted to develop a high degree of specificity for particular strains. So far, four different V<sub>1</sub> phage types of *S. paratyphi* B had been identified and more than 90 per cent of the strains isolated from patients and carriers in Britain during the past three years were found to belong to those four types. The new typing method was found to be an indispensable laboratory aid to investigation of sporadic cases or outbreaks of typhoid and paratyphoid fever. The detection of a chronic carrier was usually difficult, though the methods of isolating the bacilli had been greatly improved by the introduction of refined culture mediums. In all our recent outbreaks of paratyphoid B fever those responsible for spreading the infection were temporary excretors. The true culprits were the chronic carriers, and they escaped detection. The test, it was reported, could be used to detect chronic carriers among recovered patients who otherwise might be discharged from the hospital because they excreted bacilli intermittently. A decreasing V<sub>1</sub> titer would indicate temporary excretion, a steady or rising one, a possible carrier state.

#### Reform in the Training of Psychiatrists

The means provided for the training of psychiatrists are felt to be unsatisfactory at present. In only a few of the medical schools is the student given a proper introduction to the subject, and the standard for the diploma in psychologic medicine is low in general. To remedy this condition a committee presided over by Sir Walter Langdon-Brown has drawn up a program which has been published. The committee considers that graduates of one year should not be allowed, as at present, to emerge as fully equipped specialists. Four years' postgraduate training is recommended as the minimum for the diploma. Also the aspirant should not rush straight from medical school into specialized training but should first obtain experience in general medicine for at least one year in hospital or general practice. The committee further recognizes that for full understanding of psychiatry a year or two should be spent in close contact with mental disorders in their worst forms. The creation of psychiatric clinics in general hospitals, valuable as it is, does not remove the need for residence in a mental hospital as part of the psychiatrist's training, the committee feels. The ideal training should include both.

#### Rehabilitation of the Amputated

Members of the Allied Ex-Service Men's Provisional Committee, drawn from fourteen countries, recently paid a visit of inspection to Roehampton Hospital, the great center for supplying artificial limbs. During this war 2,330 amputations resulting from enemy action and comprising service patients and civilian men, women and children have been dealt with. The visitors met a 14 year boy from Malta whose legs had both been amputated after an air raid. He was wheeling himself in a chair and had just been swimming. He had arrived in the last month to be fitted with artificial limbs. The wonderful work for the limbless done at Roehampton involves rehabilitation on the mental no less than on the physical plane. A gunner sergeant who lost his right arm above the elbow in Libya eighteen months ago wheeled a heavy barrow and then wielded a pick vigorously to break up a lump of concrete. An instructor who lost his left arm below the elbow showed how, with special appliances, he can use that arm to saw, drive nails and handle a plane. A young girl with an artificial leg, the consequence of a German bomb, mounted rode and dismounted from a bicycle with every appearance of naturalness. Another cyclist, a man, had two artificial legs. He not only rides considerable distances but, like others among the ex-patients, stands long hours at a bench every day.



## Buenos Aires

(From Our Regular Correspondent)

Oct 1, 1943

### The Heart in Emphysema

The Brazilian Academy of Medicine recently awarded its international prize to Drs Elvise Magalhães, Egidio S. Mazzei and Jorge M. Remolar, all of Buenos Aires for their report of a clinical and experimental study on the heart in emphysema. The authors carried on their work in the Instituto de Investigaciones Aplicadas a la Patología Humana of the National Academy of Medicine of Buenos Aires. They found that the conflicting opinions previously given by several authors on the clinical effects on the heart during the course of emphysema were due to lack of differentiation of the circulatory changes caused by the bronchogenic and thoracogenic types of emphysema. Bronchogenic emphysema is the cause of chronic pulmonary heart disease, from which congestive cardiac insufficiency develops. Thoracogenic emphysema causes cardiac disorders which mainly result from coronary sclerosis.

The authors proved the interpretation of their clinical and anatomic studies by experiments on dogs. Electrocardiograms of patients with bronchogenic emphysema show preponderance of the right half of the heart and pulmonary P wave, whereas those of patients with thoracogenic emphysema show the changes proper in coronary insufficiency. Special attention is given by the authors to reports on the subject in the American literature, mainly those of Korentz and Alexander, Christie, McIntosh and Paine.

### Bullous Emphysema Caused by Bronchial Tumors

Drs M. R. Castex, E. S. Mazzei and J. M. Remolar of the Instituto de Investigaciones Físicas Aplicadas a la Patología Humana have reported the results of their investigations on the production of bullous emphysema by bronchial tumors. A certain number of bronchial tumors, as a result of a valvelike obstruction of the bronchus, lead to the production of areas of bullous emphysema. This is often the earliest radiologic sign of the bronchial neoplasm and gives a clue to the diagnosis of some cases of bronchial tumors before any shadow is visible by x-ray.

### Health of the Argentine Army

The minister of war recently presented a report in which he stated that the health of the Argentine army is extremely good. The morbidity of infections and contagious diseases is negligible. The morbidity of epidemic parotiditis is 2 per thousand and that of measles, diphtheria, pneumonia and rheumatic fever is 1 per thousand. Cases of typhoid and malaria are rare. X-ray examinations of soldiers for tuberculosis are performed frequently.

Special mention of venereal disease does not appear in the report. Success in preventing infections and the good health of soldiers are attributed to the prophylactic measures used in the army, good food and proper hygiene.

### Food of Argentine Soldiers

The minister of war recently reported on the rations of soldiers, which are based on the cost of living in the different regions of the country. The higher ration allowances are given to soldiers in the southern region. In all regions the daily menu has the proper nutritional value and is well selected and varied during the week. Army physicians are consulted in connection with nutritional values in the preparation of the various dishes. Good meat of all kinds, milk, bread, vegetables, cheese, fruits, rice, sugar and other good foods are given in abundance to soldiers. The kitchens and dining rooms of all quarters are modern and large and have proper lighting and ventilation.

## Partial Hepatectomy and Pregnancy

Drs. Erico Fels and F. de Eandi have reported to the Argentina Society of Biology on the effect of partial hepatectomy in animals on the course of pregnancy. They concluded that extirpation of one third of the liver does not prevent the normal course of pregnancy, while the excision of one half or more of the structure is followed by immediate termination of pregnancy. Nine days after removal of half of the liver, pregnancy can again occur and proceed normally, owing to the liver's remarkable power of regeneration. Administration of desoxycorticosterone or progesterone had no effect on the results.

## Public Health in Paraguay

Public health in Paraguay has recently shown improvement. The Department of Hygiene has increased its work, especially in epidemiology. The campaign against helminthiasis, trachoma, malaria, typhoid and smallpox have been intensified. A division for prevention and therapy of venereal diseases was recently established, with clinics and dispensaries for free medical care and drugs. Medical centers are to be constructed with a sum of \$1,000,000 that the government of the United States allotted to the country through the Inter-American Department of Public Health. The project will include buildings for all the various activities of public health, a central pharmacy, the Department of Hygiene and branch offices of the Department of Public Health, a sanatorium for tuberculous patients and a leprosarium. Several hospitals are to be enlarged and improved.

## Physicians in Paraguay

According to the 1942 statistics published by the Ministry of Public Health of Paraguay, there are in Paraguay 229 physicians, 73 dentists, 198 pharmacists, 7 chemists and 47 midwives.

## Physicians in Uruguay

The number of physicians in Uruguay is estimated in a recent statistical survey to be 1,635, 1 for each 1,346 persons. There are 1,177 physicians in Montevideo, 1 for each 595 persons, and outside the capital there are 458 physicians, 1 for each 3,275 inhabitants.

## Poliomyelitis in Chile

In a study of infantile paralysis in Chile, Dr. Agustín Inostroza reported that only 99 cases were observed in a period of five years (1937-1941). Eighty-four of the cases occurred in children under 2 years of age; only 1 case occurred in the age group from 5 to 10 years. No case was observed in persons above 10 years of age. Of the 99 cases reported, 98 presented motor disturbances in the lower extremities, and in 11 cases the paralysis also involved the upper extremities. In one third of the cases the paralysis was bilateral.

## Marriages

THOMAS GRIGSBY HERBERT JR. Charleston S. C., to Miss Miriam Pope of Dade City, Fla. in Jacksonville, Fla. July 23.

ROBERT JOHN FLOODY, Nutley, N. J. to Miss Victoria Lillian Stanbury of Campbellford, Ont., Canada in September.

ROBERT JAMES ALLEN, Elizabethton Tenn. to Miss Jeanette Merck of Gainesville, Ga., in Rossville Ga. recently.

THEODORE JACKSON BENDER JR. Mobile, Ala., to Miss Agnes Gaym of Memphis, Tenn. September 26.

WEIR MITCHELL TUCKER Richmond Va. to Miss Linden Crawford of Rosemont, Pa., October 2.

WILLIAM HUGHES EVANS to Mrs. Elizabeth Miller Williams both of Richmond, Va., September 29.

DANIEL A. BRODY, Youngstown Ohio to Miss Barbara Ann Murray of Lorain recently.

GAVINEL BYRON HODGE to Miss Katie Adams both of Durham N. C. September 22.

JOSEPH A. WALSH Oliphant Pa. to Miss Wynne Campbell of Baltimore, October 30.

## Deaths

Roy Dennis Halloran Ⓢ Washington, D. C., chief of the neuropsychiatry branch, Army Medical Department, died November 10 in the Walter Reed General Hospital, Washington, aged 49, of coronary occlusion.

Colonel Halloran was born in Cambridge, Mass., Aug. 4, 1894. He received his bachelor of arts degree cum laude from Dartmouth College, Hanover, N. H., in 1917, then graduated at Columbia University College of Physicians and Surgeons, New York, in 1920, serving his internship at the Newark (N. J.) State Hospital. Later he took a course in vital statistics at Harvard University School of Public Health, Boston. He was assistant physician at the New Hampshire State Hospital, Concord, in 1922 and subsequently assistant physician, senior physician and assistant superintendent of the Boston State Hospital. From 1925 to 1933 he was associate in research at the Boston State Hospital, collaborating in the establishment of the research department there. In 1935 Colonel Halloran organized the Child Guidance Clinic at Waltham, Mass., and was co-founder and director of the annual postgraduate seminars in neurology and psychiatry at the Metropolitan State Hospital, Waltham, of which he was first superintendent, a position he held at the time he entered the army. At the hospital he established the Graduate School of Psychiatry. At the time of his death he was on military leave from the institution and also from Tufts College Medical School, Boston, where he had been a member of the staff since 1928, becoming professor of clinical psychiatry in 1939.

In July 1942 Colonel Halloran was commissioned from civilian life to the rank of lieutenant colonel and assigned as consultant in neuropsychiatry in the Surgeon General's Office, Washington. A few weeks later he was named head of the neuropsychiatry branch of the Army Medical Department with the rank of colonel.

A specialist certified by the American Board of Psychiatry and Neurology, Colonel Halloran was president of the Massachusetts Occupational Therapy Association from 1939 to 1941 and served as counselor vice president and president of the New England Society of Psychiatry. He delivered the annual oration of the Massachusetts Medical Society in 1939, serving as a member of the society's legislative committee in 1940 and as counselor in 1942. He had been assistant commissioner of mental diseases for Massachusetts from 1929 to 1933.

Colonel Halloran was the author and co-author of numerous articles on neuropsychiatry and collaborated with Paul I. Yakovlev in the preparation of volume III, *Collected Lectures of the Seventh Post-Graduate Seminars in Neurology and Psychiatry*.

"The placing of a psychiatrist with each division for the purpose of preventive psychiatry was a particular accomplishment of Colonel Halloran," Major General Norman T. Kirk, surgeon general of the army, stated in commenting on Colonel Halloran's death. "The psychiatrist consultation services he set up at replacement training centers have been highly important in adjusting the new recruit to the rigors of army life."

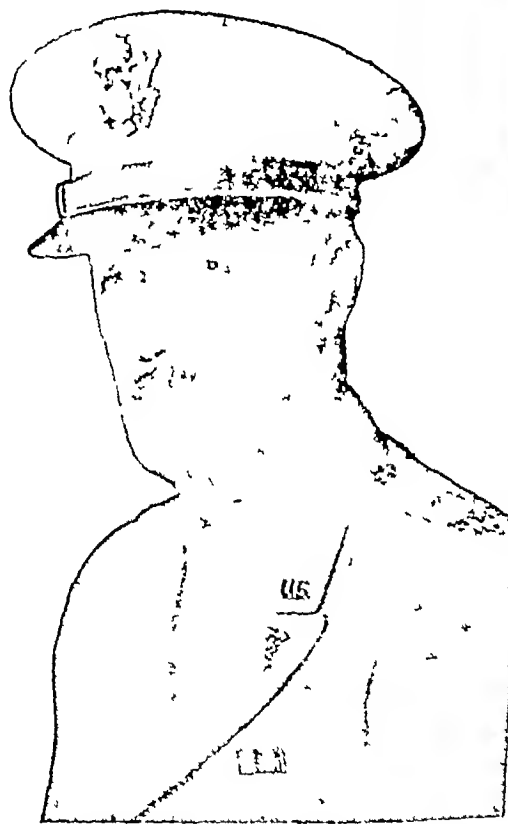
The death of Colonel Halloran again focuses attention on the tremendous burden carried by physicians as a contribution to the winning of the war. Certainly his untimely death, so young, from a failure of the heart to meet the stress placed upon it is a great loss to medicine and to the nation.

Jesse Godfrey Moritz Bullowa Ⓢ New York, Columbia University College of Physicians and Surgeons, New York, 1903, clinical professor of medicine at the New York University College of Medicine, at one time adjunct professor of clinical medicine at the New York Polyclinic Medical School and Hospital, specialist certified by the American Board of Internal Medicine and a member of the founders group, fellow of the American College of Physicians, New York Academy of Medicine, American Association for the Advancement of Science and the New York Academy of Sciences, member of the New York Pathological Society, Society for Experimental Biology and Medicine, American Association for the Study of Internal Secretions, National Tuberculosis Association, American Association of Immunologists and the American Trudeau Society, consulting physician to the New York Infirmary for Women and Children and the Norwalk (Conn.) General Hospital, consulting serologist to the Long Beach (N. Y.) Hospital, visiting physician, Harlem and Willard Parker hospitals, trustee of the Littauer Foundation, translator of Bechhold's "Colloids in Biology and Medicine" 1919, author of the "Management of the Pneumoniae, for Physicians and Medical Students," 1937, and the Beaumont Foundation lecture for 1939 "Specific Therapy of the Pneumoniae", died November 9, aged 64.

Robert Broadus Homan Sr. Ⓢ El Paso, Texas, University of Texas School of Medicine, Galveston, 1897, member of the Southwestern Medical Association and the American College of Chest Physicians, past president of the El Paso County Medical Society, formerly councilor of the First District of the Texas State Medical Association, a member of the board of directors of the Texas State Tuberculosis Association and formerly a member of the board of directors of the National Tuberculosis Association, member of the Board of Appeals, Selective Service for the El Paso district, co-owner and founder of the Homan Sanatorium, which he established in 1910 and continued to operate until 1936, co-owner and president of the board of directors of Southwestern General Hospital, president of the board of directors of Homan and Crimen Incorporated, operators of the hospital associated medical director of St. Joseph's Sanatorium, a member of the staffs of Hotel Dieu, Sisters' Hospital and the

Masonic Hospital, formerly a member of the board of managers of the El Paso City-County Hospital, a charter member of the El Paso Rotary Club and formerly a director of the El Paso Chamber of Commerce, at one time member of the board of managers of *Southwestern Medicine* and associate editor of *Diseases of the Chest*, died September 6, aged 71, of arteriosclerosis and uremia.

Charles Watts Flynn, Dallas, Texas, University of Pennsylvania School of Medicine, Philadelphia, 1911, instructor in anatomy at the University of Pittsburgh, 1912-1913, associate professor of surgery at the Baylor University College of Medicine from 1914 to 1927, professor of clinical surgery from 1930 to 1937, 1927 to 1930, professor of surgery from 1937 to 1941 and since the latter date emeritus professor, honorary professor of surgery at the Southwestern Medical Foundation School of Medicine, specialist certified by the American Board of Surgery, member of the State Medical Association of Texas, member and formerly vice president of the Southern Surgical Association, past president of the Texas Surgical Association, fellow of the American College of Surgeons, formerly chief surgeon at the Baylor University Hospital, visiting surgeon, St. Paul's Methodist and the Medical Arts hospitals, died August 13, aged 59, of cerebral hemorrhage.



COL ROY D. HALLORAN, M. C., A. U. S., 1894-1943

**Halbert Greenleaf Stetson**  $\oplus$  Greenfield, Mass., College of Physicians and Surgeons, Baltimore, 1895, member of the House of Delegates of the American Medical Association in 1904, from 1912 to 1914 and from 1916 to 1932, past president of the Massachusetts Medical Society, Franklin County Medical Society, New York and New England Association of Railway Surgeons and the Connecticut Valley Medical Association, member of the New England Surgical Society, fellow of the American College of Surgeons, medical examiner for Franklin County, member of the city board of health from 1909 to 1912, chairman of the school board for many years, president of the board of trustees, the hospital corporation and staff, Franklin County Hospital, on the staff of the Harran Memorial Hospital, Montague City served as president of the chamber of commerce, died September 15, aged 75, of congestive heart disease.

**George Van Amber Brown**  $\oplus$  McAllen Texas, Detroit College of Medicine, 1894, member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, assistant secretary from 1923 to 1928, first vice president 1923-1924 and president 1928-1929, president of the Wayne County (Mich.) Medical Society, 1927-1928, of the Northern Tri-State Medical Association in 1918 and of the Hidalgo Starr Counties Medical Society in 1940, fellow of the American College of Surgeons and a member of the board of governors from 1930 to 1932, formerly head of the German Polyclinic chief of staff, senior surgeon and chief urologist, Highland Park General Hospital, and senior gynecologist at the Providence and St. Joseph's Mercy hospitals all of Detroit, surgeon, McAllen Municipal Hospital, died September 19, aged 73, of angina pectoris.

**Edwin Lee Miller**, Kansas City, Mo. Harvard Medical School, Boston, 1911, member of the Missouri State Medical Association and president, 1935-1936, member of the Western Surgical Association and the Southern Medical Association, specialist certified by the American Board of Surgery, first lieutenant in the medical corps of the U. S. Army during World War I, a founder and member of the executive staff, St. Luke's Hospital, on the staff of St. Mary's Hospital and chief of the surgical staff of the Kansas City General Hospital for many years, consulting surgeon, Missouri Pacific Railway, received the Distinguished Alumni Award of Merit from the University of Missouri, Columbia, in 1938, died October 6, aged 56, of coronary disease with myocardial infarction.

**Raymond Ernest Senecal**  $\oplus$  New Bedford, Mass. Boston University School of Medicine 1917, appointed a member of the Public Health Council in July 1943, president of the New Bedford Medical Society, school physician served during World War I in 1929 retired as a major in the medical reserve corps of the U. S. Army, on the staffs of St. Luke's and Union hospitals, New Bedford, Acushnet Hospital, Acushnet, and St. Anne's Hospital, Fall River, physician for the board of public welfare for a number of years, member of the Franco-American Civic League, Franco-American Historical Society, New Bedford Civilian Defense Council, Massachusetts Committee on Public Safety and the American Executives Club, died August 24, aged 51, of coronary occlusion.

**John Butler**  $\oplus$  Minneapolis, University of Minnesota College of Medicine and Surgery, Minneapolis 1903, associate professor of dermatology at his alma mater, specialist certified by the American Board of Dermatology and Syphilology, member of the American Dermatological Association and the American Academy of Dermatology and Syphilology, major in the medical officers reserve corps, in charge of the department of dermatology and urology at Camp Lewis, Washington, from 1917 to 1919, colonel in the medical reserve corps not on active duty, at one time assistant city physician on the staffs of the University St. Mary's, St. Barnabas Northwestern General, Lymanhurst and Abbott hospitals, died September 18, aged 66, of coronary disease.

**Ivin Sickels**, West Nyack, N. Y. University of the City of New York Medical Department 1883, assistant professor of chemistry and physics at the Cornell University Medical College, New York, from 1898 to 1908, professor of natural history and subsequently professor of geology at the College of the City of New York, where he taught from 1875 until his retirement in 1923, at which time he was appointed professor emeritus, instructor in chemical laboratory from 1882 to 1887, lecturer in chemistry and physics from 1887 to 1891 and assistant professor of chemistry and physics from 1891 to 1898 at the University Medical College, New York, died August 5, aged 89, of pneumonia.

**John Milton Berger**  $\oplus$  Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908, formerly instructor in surgery and assistant in

clinical surgery at his alma mater and instructor and assistant professor of surgery at Loyola University School of Medicine, served as a major in the medical corps of the U. S. Army in France and Germany during World War I, on the staffs of the Garfield Park Community and St. Anne's hospitals, formerly attending surgeon at the Frances Willard Hospital, died at his home in Oak Park, Ill., September 23, aged 60, of coronary thrombosis.

**John Blair Fitts**, Richmond, Va., Medical College of Virginia, Richmond, 1914, assistant professor of orthopedic surgery at his alma mater, member of the Medical Society of Virginia and the American Academy of Orthopaedic Surgeons, in 1936 elected president of the Virginia Orthopaedic Society, fellow of the American College of Surgeons, served in France during World War I, assistant orthopedist, Hospital Division, Medical College of Virginia, orthopedic consultant at the Retreat for the Sick and the Stuart Circle Hospital where he died August 19, aged 53, of aleukemic leukemia.

**Julius Hilton Sure**  $\oplus$  Milwaukee, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903, specialist certified by the American Board of Obstetrics and Gynecology, Inc., visiting obstetrician and gynecologist, Columbia Hospital, attending obstetrician and gynecologist at the Johnston Emergency Hospital, chief of the obstetric and gynecologic clinic and consultant in obstetrics and gynecology at the Mount Sinai Hospital, where he died August 19, aged 63, of acute myocardial infarction, coronary thrombosis and arteriosclerosis.

**James Murice White**  $\oplus$  Gary, Ind., Northwestern University Medical School, Chicago, 1926, past president of the Lake County Medical Society and the Tenth District Medical Society, councilor of the Tenth District from 1938 to 1942, past president of the board of health of Gary, served as examining physician for Gary Draft Board number 9 and as a member and secretary of the Lake County Selective Service Appeal Board, on the staffs of the St. Mary's Mercy Hospital and the Methodist Hospital, where he died August 5, aged 45, of coronary thrombosis.

**Dix Henry Alverson**, Shreveport, La. Memphis (Tenn.) Hospital Medical College, 1902, member of the Louisiana State Medical Society, died suddenly September 7, aged 63, of coronary occlusion and nephritis.

**Lillian Bryan Askenstedt**, Louisville, Ky. Southwestern Homeopathic Medical College and Hospital, Louisville, 1904, formerly lecturer at her alma mater and the Deaconess Hospital, died September 25, aged 75, of coronary occlusion.

**Clarence Allen Baer**  $\oplus$  Milwaukee, Johns Hopkins University School of Medicine, Baltimore 1905, specialist certified by the American Board of Dermatology and Syphilology, served on the British and French fronts with the Red Cross during World War I and for devotion to duty was decorated by the French government, at one time chief of staff at the Milwaukee Children's Hospital, died September 15, aged 63, of coronary thrombosis and myocarditis.

**William H. Barnum**, Fremont, Mich., Saginaw (Mich.) Valley Medical College, 1902, member of the Michigan State Medical Society, secretary and past president of the Newaygo County Medical Society, chairman of the Newaygo County Selective Service Board, past president of the chamber of commerce, a director of the Home State Bank of Fremont, died suddenly in Baldwin, September 4, aged 70, of cerebral hemorrhage.

**Johnson Lorenzo Bean**, Norway, Maine, Tufts College Medical School, Boston 1933, member of the Maine Medical Association and the New England Pediatric Society, served on the staff of the Maine General Hospital, Portland, began extended active duty as a captain in the medical corps, Army of the United States, on Oct. 15, 1942, honorably discharged because of physical disability on May 12, 1943, died August 10, aged 37, of coronary occlusion.

**Hector Emile Bernadas**  $\oplus$  New Orleans, Medical Department of Tulane University of Louisiana, New Orleans 1902, past president and vice president of the Orleans Parish Medical Society, councilor of the First District Medical Society, president of the staff, Hotel Dieu Sisters Hospital, died suddenly, September 22, aged 64, of coronary thrombosis.

**Samuel M. Bloomstein**, Nashville, Tenn. University of Nashville Medical Department 1896, member of the Tennessee State Medical Association for many years, professor of clinical pediatrics at the Vanderbilt University School of Medicine, formerly a member of the city board of education, served on the board of directors of the Davidson County Tuberculosis Hospital for sixteen years, died September 24, aged 73, of endocarditis.

**Joseph Franklin Bowers**, Denver, Miami Medical College, Cincinnati, 1890, died in St Joseph's Hospital August 14, aged 75, of cerebral hemorrhage

**Robert Ambrose Buchanan**, Lodi, Calif, California Medical College San Francisco, 1896, Hahnemann Medical College of the Pacific San Francisco, 1898, College of Physicians and Surgeons of San Francisco, 1903, member of the California Medical Association, owner of the Buchanan Hospital, where he died October 25, aged 77, of generalized and cerebral arteriosclerosis

**Howard William Burkley**, Seymour, Ind., Medical College of Indiana, Indianapolis, 1902, for many years medical examiner for the Pennsylvania Railroad, died August 28, aged 63, of cerebral hemorrhage

**Eugene Charles Ciccarelli**, New York, Syracuse University College of Medicine, 1926, member of the Medical Society of the State of New York, American Psychiatric Association and the American Orthopsychiatric Association, psychiatrist for the bureau of child guidance of the city board of education, died at his home in Scarsdale, N. Y., September 24, aged 42, of carcinoma

**David Cohn**, Buffalo, University of Buffalo School of Medicine, 1905, died August 21, aged 63, of coronary thrombosis

**Lewis Reeves Dawson**, Seattle, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1882, an Ashlute Fellow of the American Medical Association, fellow of the American College of Surgeons, formerly consultant in gynecology and obstetrics at the King County Hospital, during the Spanish American War served with the First Washington Infantry, U. S. Volunteers, a lieutenant colonel and brigade surgeon in the Washington National Guard, died August 16, aged 87, of heart disease

**George William Deemer**, Las Animas, Colo., Northwestern University Medical School, Chicago, 1894, died September 10, aged 78, of coronary thrombosis

**Philip Albert Delavan**, St. Paul, University of Minnesota Medical School, Minneapolis, 1927, member of the Minnesota State Medical Association, resigned his appointment as clinical instructor in ophthalmology and otolaryngology at his alma mater on Feb. 1, 1940, specialist certified by the American Board of Otolaryngology, served during World War I, member of the staffs of University, Midway, Ancker Children's and St. Joseph's Hospital, where he died September 12, aged 44, of acute coronary infarction

**William Peter Dickerson**, Newport News, Va., Howard University College of Medicine, Washington D. C., 1899, formerly vice president of the National Medical Association, president of the Crown Savings Bank, medical superintendent, roentgenologist, president of the medical staff and treasurer of the board of trustees of the Whittaker Memorial Hospital, where he died August 8, aged 73, of subarachnoid hemorrhage

**John Guido Guenther**, La Grange, Texas, University of Texas School of Medicine, Galveston, 1897, past president of the Lavaca County and Fayette County Medical societies, served overseas during World War I, chairman of the board of trustees and president of the staff of La Grange Hospital, on the staff of the Drs. John Guenther Clinic, died September 14, aged 71, of coronary occlusion

**Oscar Lee Hansen**, Chicago, Rush Medical College, Chicago, 1897, served during World War I, died in the Veterans Administration Facility, Downey, Ill., September 19, aged 73, of chronic myocarditis and arteriosclerosis

**Thomas P. Howell**, Davis, Okla., University of Maryland School of Medicine, Baltimore, 1872, died in a hospital at Pauls Valley, July 16, aged 94, of bronchopneumonia and an injury received in a fall

**Fayette Elmore Hubbard**, Montclair, N. J., University of Vermont College of Medicine, Burlington, 1906, member, past president and vice president of the American Society of Anesthetists, Inc., medical examiner for the draft board of Bloomfield and Glen Ridge, chairman of the medical board and member of the staff of the Mountinside Hospital, died September 21, aged 66, of coronary occlusion

**Charles Leitner Jennings**, Jacksonville, Fla., University of Maryland School of Medicine, Baltimore, 1906, member of the Florida Medical Association, fellow of the American College of Surgeons, formerly chief surgeon at St. Luke's Hospital, died in the Duke Hospital, Durham, N. C., September 30, aged 62, of bronchogenic carcinoma

**William Titus Marius Liccione**, Mount Vernon, N. Y., Columbia University College of Physicians and Surgeons, New York, 1919, fellow of the American College of Surgeons, asso-

ciate gynecologist at the Mount Vernon Hospital, assistant gynecologist at the Bellevue Hospital, New York, and attending surgeon at the Grasslands Hospital, Valhalla, died September 26, aged 47, of heart disease

**Jesse Pendergraft**, Stidham, Okla. (licensed in Oklahoma under the Act of 1908), served on the staff of the Baptist Hospital, Muskogee, died August 11, aged 76, of carcinoma

**Leo Buckley Reed**, Philadelphia, Jefferson Medical College of Philadelphia, 1920, instructor in applied and topographic anatomy at his alma mater, on the staff of the Jefferson Hospital, where he died August 17, aged 47, of cirrhosis of the liver

**Walter E. Scarborough**, Avery, Texas, Barnes Medical College, St. Louis, 1904, veteran of the Spanish-American and World War I, died in Veterans Administration Facility, Waco, August 31, aged 62, of chronic pulmonary tuberculosis

**Morris J. Van Horn**, Town Hill, Pa., Medico-Chirurgical College of Philadelphia, 1902, member of the Medical Society of the State of Pennsylvania, served on the staff of the Nanticoke State Hospital, died August 30, aged 68, of carcinoma of the stomach

**Ralph Doremus Vreeland**, Newark, N. J., Columbia University College of Physicians and Surgeons, New York, 1906, member of the Medical Society of New Jersey, served as an examiner for the draft board and as a first lieutenant in the medical corps of the U. S. Army during World War I, at one time an assistant surgeon on the staff of the Roosevelt Hospital, New York, formerly medical director of L. Bamberger and Company, died in Glen Ridge August 23, aged 59, of carcinoma of the right hand with metastasis

**Charles L. Watkins**, Meridian, Miss., Mississippi Medical College, Meridian, 1911, died in Rush's Infirmary August 27, aged 69, of acute cardiac decompensation following nephritis and ureteral stone.

**Elliott Hillery Wheeler**, St. Louis, American Medical College, St. Louis, 1911, also a pharmacist, physician for the city jail for several years, died in the Evangelical Deaconess Home and Hospital August 5, aged 64, of hypertensive heart disease and uremia

**Robert E. Lee Williams**, Point Pleasant, Mo., St. Louis College of Physicians and Surgeons, 1890, died in St. Francis Hospital, Cape Girardeau, August 15, aged 80, of cerebral hemorrhage

**Homer Forest Wonders**, Philadelphia, Medico-Chirurgical College of Philadelphia, 1907, died in the Presbyterian Hospital, New York, August 27, aged 66, of cerebral hemorrhage

**Charles Austin Wynn**, Greensburg, Pa., Jefferson Medical College of Philadelphia, 1896, formerly coroner of Westmoreland County, died August 29, aged 74, of Parkinson's disease.

**Anton George Zeiss**, Sheboygan, Wis., Ludwig-Maximilians-Universität Medizinische Fakultät, Munich, Bavaria, Germany, 1888, served as county and city physician, died August 28, aged 84, of chronic myocarditis and diabetes mellitus

#### DIED WHILE IN MILITARY SERVICE

**Lester White Baird**, Temple, Texas, University of Illinois College of Medicine, Chicago, 1933, member of the State Medical Association of Texas, Radiological Society of North America, Inc., and the American College of Radiology, specialist certified by the American Board of Radiology, Inc., a fellow in radiology in the Mayo Foundation, Rochester, Minn., from 1934 to 1937, formerly a member of the Scott and White Clinic, commissioned a captain in the medical corps, Army of the United States, on Oct. 13, 1942, died in the station hospital, Camp Carson, Colo., October 6, aged 36, of coronary thrombosis

**Ross Bradley Bretz**, Colonel, M. C., U. S. Army, Durham, N. C., Western Reserve University Medical Department, Cleveland, 1909, U. S. Army Medical School, 1921, member of the House of Delegates of the American Medical Association in 1934 and the 1935 special session served during World War I, commissioned a captain in the medical corps of the regular Army Sept. 9, 1920, a major in 1929, a lieutenant colonel in 1937 and later a colonel, formerly professor of military tactics and science at his alma mater, commanding officer, station hospital, Camp Butler, died in the Moore General Hospital, Savannah, August 5, aged 59, of coronary thrombosis

## Correspondence

### "ACUTE TOXIC NEPHROSIS" AND PHOSGENE

To the Editor —I would call to the authors' attention the possibility of the production of phosgene gas during the worker's operations as cited in the protocol of the article on "Acute Toxic Nephrosis" (THE JOURNAL, September 11, p 81) The existence of carbon tetrachloride vapor in the presence of the open flame and heat during welding quite probably resulted in phosgene production

It is widely held that phosgene is considerably more toxic than carbon tetrachloride by inhalation Information is sought from the authors of this excellent clinical and laboratory study whether it may not be based erroneously on pure carbon tetrachloride as the sole contributing factor to poisoning and that a combination with phosgene may not have existed

WILLIAM R BRADLEY,  
Industrial Hygienist,  
80 Maiden Lane,  
New York City

[NOTE—This letter was referred to Dr A C Corcoran, who replies]

To the Editor —That phosgene poisoning may have complicated the pattern in our patient was suggested in the article (page 81, paragraph 2) Mr F B Mallette industrial hygienist Firestone Tire and Rubber Company, has since called to our attention the possibility that hydrogen chloride vapor may also have been formed during the heating of carbon tetrachloride.

Both these vapors are more toxic than carbon tetrachloride, but their toxicity is largely immediate in time, respiratory in character and, as far as we can determine not associated with delayed and severe manifestations of renal injury

Indeed, Mr Mallette notes the maximum concentration of carbon tetrachloride vapor tolerable for several hours with slight symptoms as 0.16 per cent by volume, whereas he calculated an exposure of our patient to 0.29 per cent by volume for five and a half hours and concludes that the effect produced in our patient might well be expected from the amount of solvent to which he was exposed

It therefore seems likely that carbon tetrachloride inhalation is sufficient explanation of the toxic nephrosis seen in our patient. The respiratory findings in this case (dyspnea, epistaxis, fluid in both pleural cavities, increased lung markings suggesting pulmonary edema) may be attributed to the action or to one or both of the products of thermal decomposition of carbon tetrachloride

However, since cases 2 and 3 and Smetana's report (Nephrosis Due to Carbon Tetrachloride, *Arch Int Med* 63 760 [April] 1939) showed evidence of pulmonary irritation after exposure to unaltered fumes of the solvent we suggested that phosgene poisoning was not essential to any part of the pattern in our case, although we must presume that it existed Interestingly, Dr M A Simon (Acute Toxic Nephritis Due to Inhalation of Carbon Tetrachloride Fumes *Canad M A J* 41 580 [Dec] 1939) has demonstrated structurally in a patient who had suffered from this condition the complete restitution to integrity shown functionally in our patient

A C CORCORAN, M D, Indianapolis

## BACILLUS VIOLACEUS

To the Editor —In THE JOURNAL of April 16, 1938 M E Black and I reported the first known case of human infection due to *Bacillus violaceus* manillae In this report it was noted that no other organisms were ever found as contaminants in any of the lesions at any time As these were large open lesions discharging for weeks, this struck me as unusual I therefore conducted a series of experiments at the time and found that there was a strong bactericidal substance produced by *B violaceus* manillae which killed other organisms and therefore prevented contaminations I wrote to various institutions in the attempt to get help in further isolating the agent, as it was a problem of biologic chemistry as well as of bacteriology Various pathologists were advised of my findings at the time in private communications, but no one indicated any interest in this phase of the study and in fact some expressed doubt as to the pathogenicity of *B violaceus*, a point which has been proved by other subsequent case reports in THE JOURNAL

Since the announcement of the results of treatment with penicillin, revived interest has been shown in my findings I want to go on record as to my original observation as to any similar substance which may be developed from *B violaceus* manillae or from any substance produced by *B violaceus* manillae in relation to its effects on other organisms or tissues I am still conducting my experiments and believe it only fair that I establish priority even though I am not yet ready to publish my final results

JOHN SHAHAN, M D, Clearwater, Fla

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL Nov 13 page 721

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Jan 17-19 Sec Dr J S Rodman 225 S 15th St Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF INTERNAL MEDICINE *Written* Various centers Feb 21 Final date for filing application is Dec 15 Asst. Sec. Dr William A Wirtell 1301 University Ave. Madison Wis

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Part II* May or June Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh 6 Pa

AMERICAN BOARD OF OPHTHALMOLOGY New York June Final date for filing application is Dec 15 Chicago October Sec Dr John Green 6830 Waterman Ave St. Louis

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Written and Oral* *Part II* Chicago Jan 21-22 Sec Dr Guy A Caldwell 3503 Prytania St. New Orleans La

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Los Angeles Feb 25 Sec. Dr Dean M Lierle University Hospital Iowa City Ia.

AMERICAN BOARD OF PEDIATRICS *Written* Locally Feb 4 *Oral* Philadelphia March 25-26 and San Francisco May 6-7 Sec Dr C A Aldrich 707 Fullerton Ave Chicago

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *Oral* Locally Dec 20-21 Sec. Dr Walter Freeman 1028 Connecticut Ave N W Washington D C

AMERICAN BOARD OF RADIOLOGY February Final date for filing application is Dec 15 Sec Dr B R Kirilin 102 110 Second Ave S W Rochester Minn

AMERICAN BOARD OF SURGERY *Written* *Part I* March Final date for filing application is Jan. 1 Sec Dr J Stewart Rodman 225 S Fifteenth St. Philadelphia.



## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Medical Practice Acts Finding of Guilt of Crime Involving Moral Turpitude After Plea of Nolo Contendere Not a "Conviction" Justifying Revocation of License**—Henry J. Schireson, who was licensed to practice medicine and surgery in New Jersey, was found guilty, after a plea of nolo contendere in a federal court, of (1) unlawfully concealing assets from a trustee in bankruptcy, (2) making a false oath in bankruptcy proceedings and (3) perjury, and was sentenced to and confined in a federal penitentiary in Pennsylvania. Subsequently and while he was confined in the penitentiary a complaint was filed with the state board of medical examiners of New Jersey charging that he had been "convicted" of crimes involving moral turpitude, which is one of the grounds enumerated in the New Jersey medical practice act for the suspension or revocation of a license to practice medicine and surgery. The board accordingly notified Schireson in writing that it would, in Trenton, N. J., on Feb. 18, 1942 hold a hearing to consider whether or not it should suspend or revoke his license. On his request, made through his attorney, the hearing was postponed to March 18 and again to April 14, but the board would grant no further postponements and proceeded with the hearing on April 14 without his presence, ultimately revoking his license to practice. The federal convict brought certiorari in the supreme court of New Jersey to review the order of revocation but the supreme court, in effect, affirmed the order of the board. *Schireson v. State Board of Medical Examiners*, 28 A (2) 879, J. A. M. A. 123 55 (Sept. 4) 1943. Schireson then appealed to the Court of Errors and Appeals of New Jersey.

The New Jersey medical practice act, said the Court of Errors and Appeals, authorizes the board of medical examiners to revoke the license of any licensee who

(a) has been adjudicated insane, or (b) habitually uses drugs or intoxicants, or (c) has practiced criminal abortion, or been convicted of the crime of criminal abortion, or has been convicted of crime involving moral turpitude, or (d) has advertised fraudulently. Before any license shall be suspended or revoked, except in the case of convictions of criminal abortions or convictions of a crime involving moral turpitude or convictions of violations of any Federal or State law relating to narcotic drugs, the accused person shall be furnished with a copy of the complaint and be given a hearing before said board in person or by attorney.

From this statute, continued the court, it is clear that the legislature ordained different standards or modes of procedure in the matter of the hearing granted the accused person. Thus, if a physician had become insane or habitually used drugs or intoxicants or had practiced criminal abortion, manifestly such status or conduct became a matter of proof on the merits before the board. But in cases where such physician had been convicted of criminal abortion or of crime involving moral turpitude, such licensee was not entitled to receive either the complaint or a hearing. In the first class of delinquents the truth of falsity of the charge had to be determined by the board as a fact issue. In the second the conviction itself of the designated crime became sufficient basis for the board's disciplinary action, and the truth or falsity of the charge on which such conviction resulted had no place whatever in the board's consideration. The question therefore is whether the proceedings had in the federal court, that is, plea of nolo contendere and sentence to prison, constitutes a "conviction" within the meaning of the medical practice act. "Conviction," according to Blackstone, "may occur two ways either by the person confessing the offense and pleading guilty, or by his being found so by the verdict of his country" [i. e. by the verdict of a jury]. A conviction in ordinary legal language consists of a plea "guilty" or verdict of guilty and it is immaterial whether final judgment has been rendered thereon. *Bishop on Statutory Crimes*, sec. 348. In *Peacock v. Judges etc.*, 46 N. J. L. 112, it was held that a plea of nolo contendere is an implied confession of the crime of which the defendant is charged and is equivalent to a plea of guilty so far as judgment and execution in that case are concerned, and that the difference between this implied confession and an expressed confession by plea of guilty

was that, after an expressed plea of guilty, "Not guilty" may not be pleaded to an action of trespass for the same injury, whereas it may at any time be done after a plea of nolo contendere. The distinction is clear that a plea of guilty to a criminal indictment will not reserve for the wrongdoer the right to contest the issue in a civil action for the same wrong, while a plea of nolo contendere creates no such estoppel but is merely an implied admission of guilt for the purposes of the instant criminal prosecution. Applying these principles to this case, the court continued, we think it was error for the intermediate appellate court to hold that Schireson could be deprived of his license to practice medicine and surgery solely on the exhibits relating to the congeries of events in the federal court that led to Schireson's imprisonment in the federal penitentiary, which exhibits were placed before the board. The statute, once the board acquires jurisdiction, ordains that the delinquent be "convicted" of the crime and to hold that a commitment on a nolo contendere plea is a conviction which may be used to satisfy the requirements of the statute, in a proceeding entirely collateral, is to accord to the plea of nolo contendere an effect which the cases and text-writers mentioned do not support. Here there was no such conviction in the strict sense or the ordinary legal sense as would estop the appellant from contesting the issue in a collateral proceeding. The provisions of the medical practice act, which are penal in character, must be construed strictly. Schireson, licensed to practice medicine under the New Jersey law, had a status in which the law protects him until such time as he might be shown to be unfit to continue in that profession. The New Jersey medical practice act ordains that under certain conditions and for specified malefactions that right may be revoked or suspended by the state. And thus, of course, is on the theory that this right, a property right, is derived from the state or society generally, and society is entitled to be protected from practitioners found to be unfit. The medical practice act makes no provision for the case of one who pleads nolo contendere to an indictment for a crime involving moral turpitude. Perhaps it is *casus omissus*. If it is, we may not supply the want. The distinction between a conviction of crime and the judgment and commitment that results from a plea nolo contendere is recognized in our law and Schireson is entitled to its benefit. That plea raises no issue but is traditionally regarded as one by which the accused submits himself to the mercy of the court. The court is always free to refuse to accept such submission. To designate a nolo contendere as a plea seems to be a misnomer. It is rather an unwillingness to plead and present a defense which is essentially the function of a plea in a criminal cause. Our conclusion is that the record of the judgment and the commitment of Schireson, following his plea of nolo contendere to the charges of the indictment in the federal court, do not amount to a conviction of the designated crime within the contemplation of the medical practice act and hence may not be used as such for the revocation of his license. Whether Schireson's license may be suspended or revoked under the medical practice act by the state board of medical examiners after a hearing on the merits of the charges that he committed a crime involving moral turpitude is a question which we expressly reserve.

The Court of Errors and Appeals accordingly, in effect, reversed the order of the board of medical examiners revoking Schireson's license to practice medicine in New Jersey—*Schireson v. State Board of Medical Examiners*, 33 A (2d) 911 (N. J., 1943).

## Society Proceedings

### COMING MEETINGS

American Society of Anesthetists, New York Dec. 9. Dr. McKinnis L. Phelps, 745 Fifth Ave., New York 22, Acting Secretary.  
Association for Research in Nervous and Mental Diseases, New York, Dec. 17-18. Dr. Thomas E. Bamford Jr., 115 East 82d St., New York 28, Secretary.  
Eastern Section, American Federation for Clinical Research, New York, Dec. 4. Dr. Charles H. Wheeler, 345 East 68th St., New York, Acting Secretary.  
Seaboard Medical Association, Richmond, Va., Nov. 30-Dec. 2. Dr. Clarence P. Jones, 3117 West Avenue, Newport News, Va., Secretary.  
Society for the Study of Asthma and Allied Conditions, New York, Dec. 4. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.  
Southern Surgical Association, New Orleans, Dec. 7-9. Dr. Allen Ochsner, 1430 Tulane Ave., New Orleans, Secretary.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1913 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 15 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Journal of Diseases of Children, Chicago

66 227-348 (Sept.) 1943

- Growth of Major Long Bones in Healthy Children. Preliminary Report on Successive Roentgenograms of Extremities from Early Infancy to Twelve Years of Age. M. M. Marek. —p. 27.  
Synchias of Vulva in Small Children. H. E. Bowles and L. S. Childs. —p. 258.  
Blood Diastase in Mumps. J. P. Murphy, C. S. Bozalis and E. J. Biern. —p. 264.  
Postoperative Pulmonary Collapse in Childhood. C. J. Molony. —p. 280.

#### American Journal of Medical Sciences, Philadelphia

206 281-420 (Sept.) 1943

- Further Historical and Experimental Studies on Menstrual Toxin. D. I. Macht. —p. 281.  
Acute Infections Polyeuritis (Guillain-Barre Syndrome). Brief Review of Literature with Report of 3 Cases. J. A. Jones, J. W. Holmes and Mary Weinstein. —p. 305.  
Hyperglobulinemia. B. M. Kagan. —p. 309.  
Calcium Salts of Sulfadiazine and Sulfathiazole with Particular Reference to Their Subcutaneous Administration. C. T. Nelson and W. W. Spink. —p. 315.  
Treatment of Pneumococcal Pneumonia with Sulfapyrazine. J. M. Rueggesser, A. L. Brookens, M. Hamburger Jr. and Eda S. Grupe. —p. 323.  
Status of Sulfonamide Therapy in Malaria. C. E. Johnson Jr. —p. 327.  
Prothrombin Studies Using Russell Viper Venom. VI. Stability of Thromboplastin-like Activity of Russell Viper Venom Under Various Conditions of Storage. R. C. Page and E. J. De Beer. —p. 336.  
Effect of Arsenic (Fowler's Solution) on Erythropoiesis. Contribution to Megaloblast-Normoblast Problem. L. R. Lmarzi. —p. 339.  
Study of Hemoglobin Metabolism and Hematology in Case of Congenital Hemolytic Jaundice During (A) Clinical Crisis (B) Repeated Transfusions and (C) Before and After Splenectomy. R. C. Lowe. —p. 347.  
Heart Size and Pulmonary Findings During Acute Coronary Thrombosis. E. Massie and W. C. Miller. —p. 353.  
Case of Myocardial Infarction Masked by Bundle Branch Block but Revealed by Occasional Premature Ventricular Beats. W. Dressler. —p. 361.  
Saccular Aneurysm of Abdominal Aorta. Report of Case with Terminal Anuria and Rupture into Duodenum. E. S. Howland and B. E. Sprockin. —p. 363.  
Survey of Protozoan Infection of Staff of Large General Hospital. M. M. Rothman and M. Laskey. —p. 369.  
Perinephric Abscess—Previously Unreported Complication of Amebiasis. D. Kirsh and R. S. Diaz Rivera. —p. 372.

**Subcutaneous Administration of Calcium Salts of Sulfonamides.**—According to Nelson and Spink, sodium salts of sulfapyridine, sulfathiazole and sulfadiazine have been administered extensively by hypodermoclysis at the University of Minnesota Hospital. Since local tissue reactions tenderness and sometimes necrosis are provoked by concentrations exceeding 1 per cent, it was decided to investigate whether calcium salts of sulfadiazine and sulfathiazole could be given in higher concentrations. Calcium sulfadiazine was administered parenterally to 24 adults. Only a few observations have been carried out with calcium sulfathiazole on human subjects. The authors found that aqueous solutions of calcium sulfadiazine may be administered subcutaneously or intravenously in concentrations up to 4 per cent with no ill effects. The pattern of absorption and excretion of calcium sulfadiazine as measured by the rise and fall of drug level in the blood does not differ significantly from that observed following the parenteral administration of comparable doses of sodium sulfadiazine. Preliminary clinical experience indicates that calcium sulfadiazine administered subcutaneously is effective in establishing and maintaining adequate blood levels of the drug. Aqueous solutions of calcium sulfathiazole administered subcutaneously resulted in local inflammation.

**Sulfapyrazine in Pneumococcal Pneumonia.**—Rueggesser and his associates used sulfapyrazine in 105 cases of "typical" pneumonia. A blood culture and sputum sample were collected from each patient, but treatment was not delayed until the causative organisms were identified. The drug is an effective agent in the treatment of pneumococcal pneumonia, for the mortality in this series was only 4 per cent. The mortality among 24 bacteremic cases was 17 per cent. The only important toxic effect of the drug was on the kidneys. Evidence of transient renal damage was found in 9 per cent of the patients treated with 1 Gm every four hours. In patients treated with 1 Gm every six hours the only manifestation of renal injury was the occasional microscopic finding of small numbers of red blood cells. Other toxic effects commonly produced by sulfonamide drugs appeared but rarely in this series. One morbilliform rash and 1 instance of nausea and vomiting were believed to be due to sulfapyrazine.

**Sulfonamide Therapy in Malaria.**—Johnson observed the antimalarial action of sulfadiazine and sulfathiazole on neurosyphilitic patients. He selected sulfadiazine for his investigation because of its low toxicity. His studies were made on neurosyphilitic patients undergoing malarial therapy. Sulfadiazine exhibited an antimalarial action with a minimum of toxic reaction. It is taken by patients with less reluctance than is quinine. The relapse rate has been established at 23 per cent. The amount of treatment used appeared to have no relation to the relapse rate. Patients suffering relapses had five, eight and nine days of treatment. Relapses are controlled by a second course of sulfadiazine. No patient had a second relapse. The author thinks that the antimalarial action of sulfadiazine could be used to advantage by the military in malarious areas.

**Heart Size During Acute Coronary Thrombosis.**—Massie and Miller studied the hearts of 16 patients following unequivocal acute coronary thrombosis by teleroentgenograms taken over periods extending from twelve hours to seven months after the acute attack. They did not observe any consistent change in cardiac size or shape. Eight of the patients showed no change in any of their entire series of films. Each of 4 other patients presented only one film with cardiac measurements significantly different from the others of their respective series, and these were taken at greatly varying intervals (three days to three months) after the attack with both increasing and decreasing measurements occurring. It is noteworthy that in the important first two weeks following the acute accident only 4 patients of the entire series had a change in cardiac measurements and in 2 they were increased while in the other 2 they were decreased. It is impossible to state from this study that there is any significant feature which characterized the 8 patients who showed a change in cardiac size following coronary thrombosis. Patients with significant change in cardiac size were somewhat more ill than the others. The roentgenologic aspects of pulmonary congestion in the first and second weeks following the coronary accident were especially noteworthy. Twelve patients showed roentgenologic evidence of such pulmonary involvement whereas in only 7 of these did auscultation reveal the presence of basal rales. In 4 patients evidence of pulmonary congestion was lacking on both x-ray and physical examination.

#### Anesthesiology, New York

4 465-576 (Sept.) 1943

- Comparison of Actions on Nerve Fibers of Certain Anesthetic Mixtures and Substances in Oil. D. Duncan and W. H. Jarvis. —p. 465.  
Effects of Certain Premedicants on Traumatic Shock Produced in Animals Under Ether Anesthesia. C. D. Anderson and H. E. Essex. —p. 475.  
Mechanism of Production of Spontaneous Cardiac Irregularities with High Concentration of Cyclopropane. W. A. Lee, O. S. Orth, C. P. Wangman and W. J. Meek. —p. 487.  
Practical Approach to Treatment of Shock. D. B. Kendrick Jr. and J. Reichel Jr. —p. 497.  
Acute Pulmonary Edema—Case Report. Edith Eason and Mary Karp. —p. 508.  
Observations on Wartime Anesthesia. F. W. Clement and C. K. Elder. —p. 516.  
Present Status of Trichlorethanol. Evelyn H. Case. —p. 521.  
Pharmacologic Studies in Search of Suitable Drug for Peritural Segmental Anesthesia. J. Abajay Jr. —p. 528.  
Sodium Penthal. Actual Experience in Combat Zone. A. T. Ro. —p. 534.

## Annals of Surgery, Philadelphia

118 329-486 (Sept.) 1943

- Regional Ileitis J W Holloway —p 329  
 Metastasizing Intracranial Tumors K H Abbott and J G Love —  
 p 343  
 Conservation of Lung Tissue by Partial Lobectomy B Blades —p 353  
 Metabolic Studies in Patients with Cancer of the Gastrointestinal Tract  
 I Ariel, P E Rekers, G T Pack and C P Rhoads —p 366  
 Congenital Duodenal Obstruction C G Morlock and H K Gray  
 —p 372  
 Nonnekehran Diverticulum of the Jejunum and Ileum R E Benson,  
 C F Dixon and J M Wough —p 377  
 Dermoid Cyst of Pancreas J I DeCoursey —p 394  
 Spontaneous Rupture of Liver Complicating Pregnancy L Rademaker  
 —p 396  
 Liver Necrosis in Burns F W Hartman and H L Romence —p 402  
 Animal Experiments with Tannic Acid R D Baker and P Handler  
 —p 417  
 Clinical Test for Differentiating Second from Third Degree Burns J A  
 Dingwall 3d —p 427  
 Pilonidal Sinus G T McCutcheon —p 430  
 Synovial Cysts of the Popliteal Space Clinical Significance and Treat-  
 ment G E Haggart —p 438  
 Hemangioendothelioma A Tumor of Blood Vessels Featuring Vascular  
 Endothelial Cells A P Stout —p 445  
 Venous Hemangioma of Skeletal Muscle R A Light —p 465  
 Venography J Mark —p 469  
 A Subclavian Aneurysm Cured by Cellophane Fibrosis P W Harrison  
 and J Chandy —p 478  
 The Coagulability of Venous Blood of Normal and Diseased Legs  
 B G P Shafroff, H Doubilet, I S Barilam and Co Tui —p 482

**Liver Necrosis in Burns**—Hartman and Romence studied in dogs the effect on the liver (1) of burns alone, (2) of various types of protein coagulating chemicals, including tannic acid, (3) of burns treated with protein coagulating chemicals and (4) of tannates and the significance of their identification in the urine. Large experimental burns resulted in engorgement of the sinusoids of the liver, especially about the central veins, and compression of liver cells in this area. Introduction of coagulating agents either as a dressing for a burned or denuded area or as a subcutaneous injection increased the incidence of degeneration and necrosis of liver cells. The three coagulating agents used in the treatment of burns were the only ones that have increased the danger of clinical jaundice and liver insufficiency. These were tannic acid, ferric chloride and silver nitrate. Tannic acid used as a wet dressing for burns produced clinical jaundice and central liver necrosis. Tannic acid given subcutaneously produced liver necrosis in 25 per cent of the animals. With intraperitoneal injection, liver necrosis was produced in 33⅓ per cent. Quebracho tannin and tannic acid neutralized with sodium bicarbonate were more potent than tannic acid in the production of liver damage. Animals having burns treated with wet dressings of tannic acid or tanning preparations and those receiving subcutaneous injections of these preparations excrete relatively large amounts of tannates and gallates in the urine. The groups have the highest incidence of liver necrosis. Sodium tannate of  $pH$  9 does not coagulate protein readily and may be given in amounts of 10 to 20 cc of the 7 per cent solution daily without reaction. Such injections have resulted in the consistent production of liver necrosis in rabbits and dogs with jaundice and death of the dogs. The excretion of tannates in the urine of animals receiving wet dressings or injections of tannic acid, coupled with the fact that these animals along with those receiving tannates intravenously have a high incidence of jaundice and liver necrosis, shows the etiologic relation of these tannates to liver lesions. Silver nitrate given subcutaneously produces necrosis and edema at the site of injection, with some degeneration, hemorrhage and liver necrosis. Clinical jaundice has not occurred, and death could not be charged to the liver damage. Ferric chloride introduced subcutaneously produces necrosis, edema and hemorrhage at the site of inoculation. Clinical jaundice occurs. The extensive central necrosis and hemorrhage in the liver must be considered as one of the causes of death.

**Animal Experiments with Tannic Acid**—Baker and Handler injected neutralized tannic acid of  $pH$  7.2 subcutaneously and found that it was as damaging to the liver as tannic acid (U S P) of  $pH$  3. Gallic acid introduced subcutaneously did not produce hepatic damage, indicating that it is not the gallic acid component which is responsible. Hepatic necrosis was produced in rats by removing the ventral skin, immersing the rat in a tannic acid bath for 15 minutes and washing the treated area with tannic acid the following day. Minor hepatic

necrosis occurred in some of the rats when one fourth of the skin of the body was removed and solutions as low as 2.5 per cent were applied. Severe hepatic necrosis was produced by 20 per cent tannic acid applied to an area of the same size, and some of the rats which received this concentration died. In control experiments in which other rats were treated with water in the same manner no hepatic damage was noted. Tannic acid produced hepatic necrosis whether aqueous solutions or ointments were used. Tannic acid produced necrosis of viable tissue over the denuded areas sometimes with a concentration of 10 per cent and regularly with concentrations greater than 10 per cent. Direct application of these experimental results to the treatment of human burns with tannic acid should be made with extreme caution, especially those dealing with absorption from a skinned area, since absorption from burns has not been investigated in this study.

**Test for Differentiating Second from Third Degree Burns**—Dingwall describes a method of distinguishing second from third degree burns. He considers a second degree burn one in which not all of the skin epithelium is destroyed, thus permitting regeneration if only from the cells of the hair follicles and sebaceous glands. A third degree burn embodies complete destruction of the epithelium and postulates granulation. Fluorescein when administered intravenously diffuses throughout the vascular tree and, after a sufficient time, some of the drug enters the intercellular fluid and stains the cells. In normal skin it permeates into all the minute vessels of the corium, even the subepithelial capillaries, and may be visualized on the surface. If enough tissue destruction has occurred, as in a third degree burn, vascular transportation of the drug to the upper and visible skin layers is impossible. In any one area some vessels may be intact while others are destroyed, and it is here that a mottling of color occurs suggestive of a deep second degree burn as opposed to the diffuse yellow of a more superficial injury. With some practice it is easy to appreciate this difference. The author has given no more than 10 cc of sodium fluorescein to any 1 patient. It appears to be a safe drug for intravenous use in such dosage, the only untoward symptoms being a transient nausea if given too fast.

**Hemangioendothelioma**—Malignant tumors of blood vessels are rare. There are three malignant vascular tumors characterized by the formation of vascular tubes but with different cells playing a dominant role. There is the group featuring the pericyte, for which the name hemangio-pericytoma has been suggested. This group includes the glomus tumors and, while the majority of them are benign, the existence of a malignant variant is established. Since smooth muscle forms a part of many blood vessels, a vascular form of leiomyosarcoma might be expected. The third group contains the majority of malignant vascular tumors. The important cell responsible for its aggressive growth and metastases is the endothelial cell. The author assembled 18 such tumors. Eleven of the patients were females and seven males. The age at onset varied from birth to 66 years, 9 were less than 30 years of age, but 6 were over 50. The majority of tumors have been in the spleen, the liver, the bones or the skin and subcutaneous tissues. Growth is infiltrative in character. The tumors are usually vascular, with a tendency to bleed into themselves or from the surface. Metastasis is common and is generally through the blood stream, although occasionally it progresses also through the lymphatics. The tumors are made up of vascular tubes which have a tendency to anastomose and are lined with hyperchromatic atypical endothelial tumor cells. They may form a single layer, be heaped up in several layers or even multiply to such a degree that the vascular tubes are completely obscured, when ordinary stains are used, and can be demonstrated only by silver connective tissue impregnations. No tumor should be called a hemangioendothelioma unless it fulfils these microscopic criteria and, conversely, if a tumor does show these characteristics it should be recognized as a malignant or potentially malignant tumor. There is no such anomalous entity as a benign metastasizing hemangioma. Two other tumor forms have been confused with this one, namely chorioepithelioma and hypernephroid carcinoma. The hemangioendothelioma of infants apparently is better differentiated and probably less malignant although it may kill by the multiplicity of its tumors. Th

silver reticulin stain is of particular assistance in distinguishing hemangiocudothelioma from hemangiopericytoma, since endothelial cells are found inside and pericytes outside the reticulin sheath of the vessels. Demonstration that tumor cells behave in vitro like endothelial cells provides further confirmatory evidence.

## Archives of Neurology and Psychiatry, Chicago

50 233-380 (Sept.) 1943

- Tuberous Sclerosis. A. T. Ross and W. W. Dickerson—p. 233  
Histologic Studies of Brain Following Head Trauma. III. Post-Traumatic Infarction of Cerebral Arteries with Consideration of Associated Clinical Picture. J. P. Evans and I. M. Scheinker—p. 258  
Studies in Diseases of Muscle. XIV. Progressive Muscular Atrophy of Peroneal Type Associated with Atrophy of Optic Nerves. Report on Family. A. T. Milhorat—p. 279  
Genealogic and Clinicopathologic Study of Pick's Disease. N. Malamud and R. W. Waggoner—p. 286  
Convulsant Shock Treatment of Patients with Mental Disease by Intravenous Injection of Acetylcholine. Electroencephalographic and Electrocardiographic Observations. M. M. Harris and B. L. Paella—p. 304  
Autonomic Balance in Patients Treated with Insulin Shock as Measured by Mecholyl Chloride. Preliminary Report. L. Gold—p. 311  
Nature of Painful Vasodilatation in Causalgia States. G. de Takats—p. 318  
Meningioma of Thirtieth Years Duration. Report of Case. R. B. Cloward and R. D. Kepner—p. 327  
Multiple Meningiomas. Removal of Four Tumors from Region of Foramen Magnum and Upper Cervical Region of Cord. C. F. List—p. 335  
Recurrent Autonomic Phenomena Associated with Exacerbations of Postencephalitic Parkinsonism. Report of Case. M. Ostow—p. 342

## Connecticut State Medical Journal, Hartford

7 611-676 (Sept.) 1943

- Medical Care Insurance—Compulsory or Voluntary. L. H. Pink—p. 619  
Public Medical Care. Some Practical Considerations. H. J. Davis—p. 622  
Connecticut State Medical Society from 1860 to Present. S. B. Weld—p. 639  
Actuarial Experience Administering Surgical Obstetric Contract, with Reference to Premiums, Benefits and Black Ink on Ledger. J. C. Ketchum—p. 650

## Georgia Medical Association Journal, Atlanta

32 289-316 (Sept.) 1943

- Medical Achievements in Present War. L. Sheldon Jr.—p. 289  
\*Riboflavin Deficiency versus Perlèche. Differential Diagnosis of Fissuring of Labial Commissures. P. H. Nippert and A. P. McGinty—p. 295  
Use of Vitamin C and Nicotinic Acid in Bright's Disease. J. W. Daniel—p. 297  
Osteomyelitis. J. R. Lewis Jr. and W. J. Senter—p. 302  
Resuscitation of Newborn. T. S. Gatewood—p. 306

**Riboflavin Deficiency versus Perlèche**—Nippert and McGinty point out that fissuring at the corners of the mouth is not always due to riboflavin deficiency. There is an intertrigo of the labial commissures, designated as perlèche ('to lick'), which may be mistaken for riboflavin deficiency. In children perlèche often develops because of an abnormal amount of moisture at the angles of the mouth, a condition resulting from the habit of licking. In adults the lesion is most frequently seen as a result of a narrowed bite, either because the natural teeth have been worn down or because of improperly fitting artificial dentures. The narrowed bite produces an additional fold at the labial commissures, the skin in this area then, because of constant moisture from saliva becomes macerated, fissured and infected. Cheilosis of riboflavinosis is usually accompanied by other signs of the deficiency and is cured by an adequate consumption of riboflavin. The cheilosis of perlèche is relieved only by correcting the anatomic defect that resulted in the intertrigo. This will usually require new well fitting dentures. Three cases are presented to illustrate the differential diagnosis.

## Illinois Medical Journal, Chicago

84 173-228 (Sept.) 1943

- Thyroid in Childhood. A. J. Carlson—p. 192  
Experimental Cretinism. M. M. Kunde—p. 192  
Pituitary-Thyroid Relations. H. G. Swann—p. 197  
Growth and Development in Graves Disease with Report of Puerile Case Associated with Unverified Thyrotropic Pituitary Adenoma. H. P. G. Seckel—p. 200  
Diagnosis and Prognosis of Thyroid Deficiency in Childhood. I. P. Bronstein—p. 206  
Observations on Bacterial Allergy in Scarlet Fever. J. A. Conner and A. Milner—p. 214

## Journal of Clin Endocrinology, Springfield, Ill.

3 445-482 (Aug.) 1943

- Further Consideration of Cushing Syndrome. K. W. Thompson and Louise Eisenhardt—p. 445  
Oral Therapy with Sodium Estrone Sulfate. I. Induction of Bleeding and Cycle Regulation in Functional Amenorrhea. V. H. Turner, C. D. Davis and E. C. Hamblen—p. 453  
Id. II. Induction of Hemostasis and Cycle Regulation in Functional Uterine Hemorrhage. V. H. Turner, C. D. Davis and E. C. Hamblen—p. 455  
Contribution to Treatment of Amenorrhea. M. Berling—p. 457  
Influence of Thyroid Activity on Renal Function. E. M. MacKay and J. W. Sherrill—p. 462  
Pregnancy Occurring in Cretinism and in Juvenile and Adult Myxedema. G. Parkin and J. A. Greene—p. 466  
Insulin Lipohypertrophy. M. G. Goldner—p. 469  
Endometrial Biopsy. J. C. Burch and Doris Phelps—p. 475

## Journal Industrial Hygiene & Toxicology, Baltimore

25 253-322 (Sept.) 1943

- \*Protection of Radium Dial Workers and Radiologists from Injury by Radium. R. D. Evans—p. 253  
Protection of Radium Dial Painters—Specific Work Habits and Equipment. G. E. Morris, I. R. Tabershaw, J. B. Skinner and M. Bowditch—p. 270  
Mercury Vapor Measurement. Radioactive Method. C. Goodman, J. W. Irvine Jr. and C. F. Horan—p. 275  
Sensory Response to Certain Industrial Solvent Vapors. K. W. Nelson, J. F. Ege Jr., M. Ross, L. E. Woodman and L. Silverman—p. 282  
Glucuronic Acid in Urine as Measure of Absorption of Certain Organic Compounds. W. Deichmann and G. Thomas—p. 286  
New Type Adhesive Impingement Dust Counter. F. B. Rowley and R. C. Jordan—p. 293  
Dust Reduction at Coalface by Means of Water Sprays. C. G. Warner—p. 303  
Ventilation Requirements for Solvents in Industrial Tanks. L. Silverman—p. 306

**Protection of Radium Workers**—Evans points out three health hazards in the handling of radium and radium products: (a) radium poisoning from ingestion or inhalation of radium, (b) respiratory lesions from inhaled radon and (c) radiation injury from overexposure to gamma rays. Inhalation of dust containing traces of dry radium paint must be guarded against as carefully as the ingestion of bits of radium paint. Under the best working conditions now existing in the dial painting industry about 15 per cent of the workers accumulate more than the tolerance dose of radium. These persons can be successfully identified by routine tests every four to six months of the radon content of their exhaled air. Those who accumulate more than the tolerance quantity of radium, if identified promptly, can be shifted to nonradium work until their radium content falls to a safe level by natural elimination. They may then safely return to radium work. Inspectors of radium dials and pointers, and those who finish balance or assemble instruments are often exposed to greater hazards than the dial painters, because of the greater chances for inhaling dust and dry flakes of radium paint. Power ventilation designed to remove radon and radium dust from the workroom air is essential. Samples of room air should be analyzed for radon at least every six months and also whenever changes are made in the ventilating system or in the type of work done in each room. Meticulous housekeeping, including the performance of all cleaning operations as wet processes, is the essence of protection from radium ingestion and inhalation.

## Journal-Lancet, Minneapolis

63 225-268 (Aug.) 1943

- Presidential Address. A. R. Sorenson—p. 241  
Epidemic Encephalitis in North Dakota and Minnesota 1941. Studies on Etiology, Epidemiology and Serum Treatment. E. C. Rosenow and H. W. Caldwell—p. 247  
Observations on Selenium Poisoning in South and North America. R. E. Lemley—p. 257

63 269-306 (Sept.) 1943

- Induction and Stimulation of Labor with Ergot. C. J. Fahrenberg and J. A. Haugen—p. 290  
Minnesota Multiphasic Personality Inventory. B. C. Schiele, A. B. Baker and S. R. Hathaway—p. 292  
Report on Heart Program of Bureau for Crippled Children Medical Unit (Abridged). Division of Social Welfare. Feb. 16 1942 to Feb. 15 1943. M. J. Nydahl—p. 297

Kansas Medical Society Journal, Topeka

44 253-288 (Aug.) 1943

Unusual Fracture of Second Cervical Vertebra H L Collins—p 253  
Cocaine as Topical Anesthetic P W Miles—p 254  
Treatment of Psychoneuroses of War R P Knight—p 257  
Multiple Hepatic Abscesses in Typhoid Fever with Recovery R H Major—p 265

44 289-324 (Sept.) 1943

Artificial Respiration in Poliomyelitis Civil Air Patrol Method L K Zimmer—p 289  
Effect of Sulfonamide Therapy on Common Cold A J Kauvar and F R Mount—p 290  
Fundamentals of Psychiatry V Personality Structure W C Menninger—p 294  
Erythrocytopenia R H Major and C J Weber—p 299

**Sulfonamide Therapy in Common Cold**—Kauvar and Mount studied 127 patients with upper respiratory infections of unknown causation. Seventy-five cases were treated symptomatically and 52 comparable cases were treated in addition with sulfonamides. There was no evidence that the use of chemotherapy influenced the course of the disease or prevented complications. Complications secondary to chemotherapy administration tend to be more frequent and more severe than those following the usual upper respiratory infection. Use of chemotherapy in a trivial case may sensitize the individual so that its subsequent use is contraindicated in a more serious illness in which it is urgently needed.

Maine Medical Association Journal, Portland

34 169-188 (Sept.) 1943

Peripheral Vascular Disease and Its Treatment by Interruption of Sympathetics S C Harvey—p 169  
Portland Charitable Dispensary and Portland Tuberculosis Clinic T J Burrage—p 174

Military Surgeon, Washington, D C

93 237-338 (Sept.) 1943

Rickettsial Diseases E E Ifume—p 237  
Methyl Bromide Gas as Fumigant for Control of Bedbugs (*Cimex lectularius* L.) at Fort Leonard Wood, Missouri L O Tarleton and I B Dworkin—p 251  
Survey of Epidemic of Acute Respiratory Cases in Activating and Training Area, Fort Lawton, Washington A G Hallett—p 265  
Preservation of Wassermann Sera by Means of Sulfanilamide J P Crawford and L D Herbert—p 274  
Treatment of Dermatitis Venenata S W French and L J Halpin—p 275  
Double Bunking the Army E S Isthmian—p 279  
Crisplastic Operation in Rehabilitation of Amputation Cases H H Kessler—p 281  
Corneoscleral Suture in Military Ophthalmology E P Burch—p 286  
Refrigeration Therapy in Vascular Trauma W F Bowers—p 289  
Physical Medicine in Maxillofacial Injuries H H Weisengreen—p 294  
Treatment of Fusospirochetal Infections of Mouth and Throat with Sulfathiazole F G Hirsch and C L Spingarn—p 299  
Practical Aspects of Diagnosis and Surgical Treatment of Meniscus Injuries H M Childress and W H Hagen—p 301  
Management of Special Diets in Cantonment Hospital A T Haerem—p 305  
Nontraumatic Tears of Tibial Fascia W B Schaefer—p 308  
Double March Fracture Case Report S R Terhughe and T S Eddleman—p 310  
Universal Shock Block R P Howell and G R Benton Jr—p 312  
Simplified Fracture Table of All Wood Construction C U Hauser and W F Martin—p 313  
Mobile Field Dispensary for Use in Army Industrial Plants and Depots J S Cullyford, E B Ley and F J Vintinner—p 317

**Refrigeration Therapy in Vascular Trauma**—Bowers reports 4 cases in which refrigeration was used. Refrigeration decreases metabolic needs so that a damaged circulation may be adequate. The application of ice packs to the injured extremity will gradually render the part anesthetic and will allow a painless transportation of the injured soldier. This is a considerable factor in the reduction of secondary collapse from continued pain. Bacterial growth is inhibited by refrigeration therapy due to decreased oxidation, enzymes and toxins are temporarily inactivated. This means that a dirty wound is maintained in a stationary condition until debridement can be carried out. If refrigeration is continued after definitive treatment because of irreparable vascular damage, such therapy must be continued until collateral circulation is established, until vasospasm is overcome, until thrombosed vessels recanalize or until the criteria of failure are present. Refrigeration therapy must be withdrawn slowly to prevent rapid spread of gangrene or infection.

**Sulfathiazole in Fusospirochetal Infections of Mouth and Throat**—According to Hirsch and Spingarn, infections of the mouth and throat with the fusospirochetal group of bacteria are encountered frequently in military medicine. In the first world war they were common among the enlisted personnel, especially under field conditions, and were known as "trench mouth." The causative organisms are present in small numbers as harmless saprophytes in many normal mouths, but they may become pathogenic in the presence of predisposing conditions such as trauma to the oral mucosa by neglect of the hygienic care of the mouth and teeth and a lowering of the general health and resistance. The disease may take several forms. Commonly one encounters (a) gingivitis, marked by numerous ulcerations of the peridental tissues with reddening and swelling of the gums, which bleed easily, and (b) angina, characterized by ulcerations of the tonsils and pharynx. A variety of therapeutic agents have been used to treat infections of this type. This series consists of 8 young men with fusospirochetal disease of the mouth or throat. Moderate doses of sulfathiazole (4 Gm daily) for periods of two to six days were effective in controlling fusospirochetal infections of the mouth and throat. This therapy is well tolerated and produces a prompt relief of symptoms and healing of the lesions. The treatment has the advantages of simplicity and speed.

Minnesota Medicine, St. Paul

26 753-848 (Sept.) 1943

Differentiation of Endometriosis and Carcinoma of Sigmoid Colon E L Jenkinson and W H Brown—p 773  
Practical Applications of Routine Blood Count in the Newborn with Special Reference to Obstetric Nursery F C Neff—p 779  
Transurethral Resection Autopsy Findings in 26 Cases A N Collins—p 782  
Damage to Spinal Cord and Meninges Following Spinal Anesthesia—Clinicopathologic Study G R Kamman and A B Baker—p 786  
Minnesota Soldiers Discharged for Mental Disability R C Gray—p 791  
Influence of War on Medicine B C Crowell—p 795  
Thiamine Hydrochloride—Aid in Solution of Mosquito Problem W R Shannon—p 799  
History of Medicine in Dodge County J Eckman and C E Bigelow—p 805

**Thiamine Hydrochloride and Mosquito Problem**—Shannon reports results obtained in combating the mosquito pest by the administration of large doses of thiamine hydrochloride. He describes 10 cases which show that thiamine hydrochloride in adequate dosage, administered either by mouth or by injection, is capable of reducing the mosquito hazard in at least three ways: (1) It diminishes the approach of the mosquito toward the protected individual, (2) it lessens and may entirely combat the itching that usually follows the bite, (3) it minimizes and often entirely prevents the formation of a papule at the site of the bite. Indeed it causes a rapid recession of welts even of long standing.

New England Journal of Medicine, Boston

229 387-422 (Sept 2) 1943

Differential Diagnosis of Chronic Bright's Disease Clinicopathologic Correlation J S Mansfield G K Mallory and L B Ellis—p 387  
Familial Auricular Fibrillation L Wolff—p 396  
Acute Pneumonitis and Pericarditis Report of Case C C Fuller and J W Quinlan—p 399  
Bright's Diseases (concluded) S E Bradley—p 402

**Familial Auricular Fibrillation**—Wolff points out that, although auricular fibrillation is one of the commonest disorders of the cardiac mechanism, its familial occurrence is rare. He reports observations on 3 brothers with auricular fibrillation mentioned earlier and on 2 new cases in brothers. These 2 instances of familial occurrence of auricular fibrillation are unique in medical literature. All 3 of the first set of brothers had permanent auricular fibrillation. Arrhythmia was constantly present years before a diagnosis of fibrillation was made, suggesting that an abnormal mechanism was present at birth or developed early in life. Congenital auricular fibrillation is suggested particularly in 1 case. The 3 brothers lived normal lives, and 2 of them engaged in strenuous sports without difficulty. Although the arrhythmia was untreated, the ventricular rates were slow, even after exercise. A likely explanation for the slow ventricular rate was furnished by the evidence of a strongly preponderant vagal tone, which also may have been



a factor in the production of auricular fibrillation. The author suggests that an increased vagal tone may be an etiologic factor in the production of auricular fibrillation in certain cases. Auricular fibrillation, even when untreated and of many years' duration, is entirely benign, provided the ventricular rate is slow and embolism does not occur. Under these conditions, auricular fibrillation does not cause cardiac enlargement. The combined administration of digitalis and quinidine for abolishing auricular fibrillation was in these cases superior to the use of quinidine alone.

## Public Health Reports, Washington, D C

58 1329-1364 (Sept 3) 1943

Patient Load of Physicians in Private Practice. Comparative Statistical Study of Three Areas. A. Cicco and I. Altman—p 1329

58 1365-1392 (Sept 10) 1943

Surveys of Liquid Wastes from Munitions Manufacturing. R. S. Smith and W. W. Walker—p 1365

Twenty Year Survival of Virulent *Bacillus Pestis* Cultures Without Transfer. E. Francis—p 1379

58 1393-1428 (Sept 17) 1943

Surveys of Liquid Wastes from Munitions Manufacture. R. S. Smith and W. W. Walker—p 1393

## Surgery, St Louis

14 321-486 (Sept) 1943

Surgery of Terminal Ileum Cecum and Right Colon. A. O. Whipple—p 321

Blood Supply of Large Bowel with Reference to Resection. A. O. Singleton—p 328

Consideration of Elective Surgical Procedures in Various Segments of Colon. T. E. Jones—p 342

\*Carcinoma of Colon. A. W. Allen—p 350

Cancer of Colon. M. M. Zininger and P. I. Horwath—p 366

Carcinoma of Colon and Rectum. Report of 503 Patients Treated at Lahey Clinic 1938-1941 Inclusive. R. B. Cattell—p 378

\*Management of Polyps Occurring in Rectum and Colon. V. C. David—p 387

New Practical Sigmoidoscope. P. G. Wakeley—p 395

Anterior Resection of Rectosigmoid and Upper Rectum with Reestablishment of Continuity. L. S. Fallis—p 397

Primary Resection (Closed Anastomosis) of Colon and Rectosigmoid Including Description of Abdominoanal Methods for Restoration of Continuity Accompanying Excision of Carcinoma of Rectal Ampulla. O. H. Wangersteen—p 403

**Carcinoma of Colon.**—Allen states that carcinoma of the colon accounts for at least 11 per cent of deaths from cancer in the United States. The concept of resectability should be substituted for operability. In his 186 cases of colonic cancer 91 per cent were resectable. Mortality and morbidity are directly related to resectability. Immediate removal of the growth is not as important as proper preoperative preparation. This includes the use of sulfonamides, cleansing the involved bowel, the preliminary use of the Miller Abbott tube and supportive measures. Preliminary ileotransverse colostomy with aseptic suture is advocated for lesions of the right colon and the proximal third of the transverse colon. Preliminary tube cecostomy is advocated for lesions of the remaining colon. These procedures will increase the resectability rate in this group of patients, which offsets the added morbidity. It also appears to reduce the mortality rate. Resection with immediate aseptic anastomosis is the author's method of choice for the second stage. The Parker-Kerr type of anastomosis has been satisfactory to him. He recommends delayed closure of the abdominal wound by Collier's technique forty-eight hours after resection.

**Management of Polyps in Rectum and Colon.**—According to David, areas of hyperplasia, pedunculated adenomas and sessile papillomas are common tumors in the colon. Hyperplasia of the bowel mucosa gives no symptoms and is found in the course of proctoscopy in examination of surgically removed segments of bowel or at necropsy. Adenomas make their presence known by bleeding protrusion from the rectum if they are low in the bowel and cramplike pains due to attempts of the bowel to push them along and occasionally by becoming an apex of an intussusception. The symptoms of villous tumors or papillomas are much the same as adenomas except that they are usually associated with the passage of a large amount of

mucus. Polyps of the colon and rectum should be radically destroyed or removed, because of their tendency to malignant degeneration. Many can be handled by fulguration and local removal but, when necessary, more radical surgery is indicated.

## Texas State Journal of Medicine, Fort Worth

39 275-322 (Sept) 1943

Classification of Bone Tumors. G. T. Caldwell—p 282

X-Ray Treatment of Bone Tumors. C. L. Martin—p 285

Diagnosis in Primary Bone Tumors. W. B. Carrell—p 289

Indications for Surgery in Bone Tumors. B. L. Coley—p 290

Management of Cardiac Arrhythmias. A. W. Harris—p 293

Treatment of Osteomyelitis. G. W. N. Eggers and M. D. Knight—p 297

Leber's Disease. Report of 4 Cases in One Family. C. S. Alexander—p 301

Doctor and Postwar World—p 303

Suggested Procedures for Control of Typhus Fever. G. W. Cox—p 305

## United States Naval Med Bulletin, Washington, D C

41 1213-1512 (Sept) 1943 Partial Index

Medical Department of Battleship in Action. J. A. Syslo—p 1213

War Wounds of Head. J. T. B. Carmody—p 1227

Filariasis in Defense Force Samoan Group. Preliminary Report. J. G. Dickson, R. W. Huntington Jr and S. Eichold—p 1240

Absence of Skin Irritants in Contents of Vesicles. M. B. Sulzberger and J. H. Katz—p 1258

Low Back Pain and Sciatica with Special Reference to Roentgen Interpretation. H. F. Hare and L. W. Langs—p 1263

Pilonidal Cysts and Sinuses in Navy. W. Z. Lane—p 1284

Combat Fatigue and War Neurosis (concluded). G. N. Raines and L. C. Kolb—p 1299

Electroencephalography in Selection of Naval Recruits. P. Solomon, H. I. Harris, C. L. Wittson and W. A. Hunt—p 1310

Detection of Mahiningering Through Psychometric Tests. W. A. Hunt and H. J. Older—p 1318

Management of Navy Personnel with Rheumatic Fever. H. A. F. Coburn—p 1324

Care of Injured Hand. W. H. Requarth—p 1329

Injuries of Semilunar Cartilages of Knee. T. H. Peterson and J. J. Lille—p 1336

\*Ocular Pathology in Various Types of Dietary Deficiencies with Particular Emphasis on Arteriolar Sclerosis. Experimental Study. A. A. Knapp and S. N. Blackberg—p 1339

Laboratory Aids in Treatment of Shock State. H. R. Brown Jr—p 1345

\*Allergic Reactions to Dried Human Plasma. W. J. Colonnell—p 1356

Sterilization Process for Powdered Sulfonamides. L. A. McClintock and R. H. Goodale—p 1360

Treatment of Chronic Gonorrhea with Combined Sulfathiazole and Intravenous Typhoid Vaccine. E. A. Hand—p 1365

Studies in Maintenance of Instrument Sterility. S. R. Howell—p 1370

Sodium Pentothal Anesthesia in Intraoral Surgery at Sea. C. R. Carr and D. E. LaMothe—p 1374

Nasal and Pharyngeal Irritation from Contact with Sucrose Octa Acetate. Among Operators of Compressed Air Hammers. F. J. Viles—p 1378

**Ocular Pathology in Dietary Deficiencies.**—Knapp and Blackberg report that lesions resembling senile arteriolar sclerosis in man were produced in the eyes of rats suffering from various types of malnutrition. Faulty nutrition, irrespective of whether the deficiency was caused by a lack of adequate caloric intake, vitamin A or vitamin B complex consistently produced increased light reflex, pallor and uniform attenuation of the arterioles along their entire course. In previous experiments the authors observed that in vitamin D deficiency similar pathologic changes were produced. The arteriolar sclerosis induced was not specific for any vitamin deficiency but rather followed a general nonspecific disturbance of the cellular nutrition.

**Allergic Reaction to Dried Human Plasma.**—Colonnell points out that scattered reports of reactions to pooled blood plasma have appeared but that no satisfactory explanation has been given. He reports a case which demonstrates the remote possibility of reactions with pooled dried blood plasma. The fact that thousands of plasma transfusions have been given without reactions is probably due to the caution in collecting blood and the dilution factor in pooling. The questioning of blood donors as to allergy, the taking of blood after a short fast and the refusing of blood from individuals receiving any form of injection treatment is evidence of the safety of administration of plasma under proper supervision. The presentation of this case history may throw some light on the few reactions which have occurred and it should impress the necessity of having epinephrine handy when blood plasma is to be used. It also demonstrates the presence of an allergen (probably) in pooled human plasma.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Medical Journal, London

2 257-288 (Aug 28) 1943

- Surgical Treatment of Bronchial Carcinoma R C Brock—p 258  
 \*Explosive Epidemic of Sonne Dysentery C A Green and M C MacLeod—p 259  
 Infective Hepatitis Treated with Glucose, Insulin and Ascorbic Acid D R MacDonald—p 261  
 Liver Deficiency Anaemia in Case of Acute Infective Hepatitis J N Hill and W Hausman—p 262  
 \*Etiology of Fibrositic Nodule Clinical Contribution W S C Copeman—p 263  
 \*Vitamins and Physiologic Function G N Jenkins and J Yudkin—p 265  
 Cry of Child in Utero I M Jackson—p 266

**Explosive Epidemic of Sonne Dysentery**—Green and MacLeod describe an epidemic due to *Bacterium sonnei* in which the possibility of water borne infection was subsequently supported by laboratory evidence. The outbreak involved approximately 400 cases. The circumstances under which *B. sonnei* was isolated from a sample of water precluded the possibility of a sampling error. A disturbing feature was the fact that the sample of water satisfied the usual standards for purity and that 0.15 part per million residual chlorine was still present. This appeared to be a direct contradiction until it was found experimentally that *B. sonnei* could survive after treatment with this strength of chloramine for periods longer than those applicable to much of the water. The position was rendered more dangerous by the fact that the chlorine-ammonia ratio of 2:1 was such as to delay considerably the sterilization process. The apparent connection observed between one particular milk supply and a group of cases was interesting in that the dairyman concerned was in the habit of rinsing his bottles with cold tap water after they had been sterilized by steam and probably introduced the infection to his supply in that manner. Flies were considered as possible vectors, but when the epidemic had practically subsided the usual summer increase in the fly population developed without stimulating further infection. This appeared to minimize the importance of flies in this particular epidemic.

**Etiology of the Fibrositic Nodule**—Copeman relates that, in a recent epidemic of influenza in which he examined 40 cases, lumbar and other pain was a prominent feature. It was observed that the pain was also referred from small hyper-sensitive areas in the muscles. These were indistinguishable from "rheumatic" myalgic spots. On reexamination of the patients after one and two months these spots were still found to be present, although in diminishing numbers. None of these patients had a previous rheumatic history. Myalgic spots which had arisen during influenza were reactivated in one patient by an attack of mumps. In another, this occurred as the result of the artificial induction of sandfly fever. It appears that myalgic spots can arise in the course of acute influenza and that these will persist in a proportion of cases. They can be reactivated by infections of other types. Rheumatic pains are a characteristic sequel of many of the exanthems, mostly those of virus origin. Observation has shown that these pains, which tend to arise in a less acute manner, are also generally of the focal type. It is therefore suggested that the myalgic spots which form the basis of many of the rheumatic syndromes of later life are sometimes a legacy from acute infections in earlier years. The victims are often unaware of their presence until they become activated by factors such as chill, trauma or focal sepsis. These should consequently be regarded as secondary and no longer causative.

**Vitamins and Physiologic Function**—Jenkins and Yudkin tested 178 school children aged 11 and 12, about half of whom had received vitamin supplements daily at school for one year. The supplements provided each school day were 5,000 international units of vitamin A, 1 mg of vitamin B<sub>1</sub>, 25 mg of vitamin C and 500 international units of vitamin D, the average addition over the year being about a half of the daily requirements of these substances. No difference was observed between the control group and the supplemented groups in resting pulse

rate, vital capacity, breath holding or 40 mm endurance test. The authors point out that, if they accept the validity of the observations of the Manchester investigators, the fact that vitamin supplements did not induce such changes in physiologic function in their subjects might possibly be due to the children not having been deficient in these nutrients before the administration began. This is supported by the fact that there was also no improvement in other respects after the year's dosing. Gain in height and weight, strength of grip, hemoglobin, intelligence, educational attainment and dark adaptation were no different in those children receiving the supplement from what they were in those receiving the control pellets.

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- Phases of Maturation, Fertilization and Early Development in Man W J Hamilton, Josephine Barnes and Gladys H Dodds—p 241  
 Renal Failure Following Abortion 2 Cases Phyllis Dingle—p 246  
 Reactions to Pressor Substances in Normal and Toxic Women F J Browne—p 254  
 Delivery of Fetal Head in Occipitoanterior Positions of Vertex W Hunter—p 260  
 Further Study of Clinical and Pathologic Properties of Malignancy J R Goodall—p 271  
 Obstructed Labor Due to Dysgerminoma Case D A Abernethy—p 278  
 \*Full Time Hydatidiform Mole with Central Placenta Previa Case A J Herring—p 281  
 Response of Isolated Muscle Strips from Upper and Lower Segments of Human Full Time Pregnant Uterus to Pitressin and to Pitocin C S Russell—p 287  
 Antenatal Thrombophlebitis J P Maxwell—p 299

**Full Time Hydatidiform Mole with Central Placenta Previa**—Herring reports a case of full time hydatidiform mole without a fetus but with a central placenta previa and associated severe toxemia. A cesarean section was performed because of the central placenta previa, which revealed the true condition. Hyperpyrexia and breast secretion were of interest after the operation. A follow-up of thirteen months showed persistently negative Aschheim-Zondek tests and a return to normal menstrual periodicity and good health.

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- Hormones of Digestive Apparatus B A Houssay—p 519  
 Value of Sulfonamide Therapy in Perinephritis I Diaz Muñoz and A Vargas Molinare—p 529  
 Arthroplasty of Elbow R Urzua and G Vergara—p 536  
 \*Blood Transfusions in Sydenham's Chorea O Salas C and E Uiberall—p 540  
 Prothrombinemia and Its Response to Vitamin K in Jaundice H Alessandri, H Ducci and J Motis—p 549  
 Action of Certain Drugs on Oddi's Sphincter R Yazigi—p 555  
 Meningococcal Meningitis B Viel and R Alvarado—p 559  
 Treatment of Pulmonary Suppurations H Oyangueren M—p 568

**Blood Transfusions in Treatment of Chorea**—Salas C and Uiberall employed blood transfusions in the treatment of 22 patients with chorea. The disease was severe in 7 cases, moderately severe in 11 and mild in 4. The ages of the patients varied between 7 and 22 years. Five had a history of rheumatism and 12 had clinical signs of past or present rheumatic disease. From 100 to 150 cc. was the average amount of transfused blood, but in a few cases up to 250 cc was given. The transfusions were given at intervals of three or four days. Generally a total of three was made, but in stubborn cases as many as five. Cure was obtained in 15 cases, great improvement in 4, mild improvement in 1 and no effect in 2. The favorable results had no relation to the seriousness of the disease, on the contrary, the blood transfusions seemed to give the most rapid results in the very acute and grave cases, whereas the sequels of the acute states seemed to be less amenable to this treatment. The authors advise against tonsillectomy during the acute stage of chorea, considering it an excessively grave intervention. They recommend it after the disease has been cured in order to prevent further rheumatic complications. This is based on the fact that the majority of cases of Sydenham's chorea are of rheumatic origin. The mechanism of blood transfusions in chorea is like that of pyretic therapy. It involves a reactivation of the cellular metabolism by proteins introduced by the parenteral route, the production of immunizing bodies and a focal reaction with hyperemia.

## Book Notices

*Distribution of Health Services in the Structure of State Government*. By Joseph W. Mountain and Evelyn Flook. [Reprinted from Public Health Reports.] From the States Relations Division. Prepared by Direction of the Surgeon General Federal Security Agency, U. S. Public Health Service. Public Health Bulletin No. 184. Third edition. Paper. Various Washington, D. C. Supt. of Doc. Government Printing Office. 1943.

This is the direct inheritor of the subject matter and critical consideration of state health services first put into book form by Dr Henry I. Bowditch and presented by him in his address at the Centennial Exposition in Philadelphia in 1876 (Hygiene in America, Boston, Little, Brown & Co. 1877). Dr Bowditch by personal correspondence and acquaintance with leading physicians and some other citizens of prominence across the continent gathered and presented the first account of the quantity and something of the quality of sanitary and communicable disease control in our states and territories of the post-Civil War period. This was followed by the classic report by Dr Henry V. Chapin in 1915, published by the American Medical Association describing the activities, equipment and accomplishments of the various state boards of health. In 1929 the U. S. Public Health Service published as Bulletin 184 the results of a survey made by the Health Division of the Rockefeller Foundation of the changes which had taken place between 1915 and 1925, together with new information of a financial, personnel and administrative character. A revised or second edition appeared under the same auspices in 1932, bringing the national experience on a state basis up to 1930.

The present bulletin, which is based on state organization for health services in 1940, includes functions of state health departments and activities spoken of as of a health nature which deal with the diagnosis and treatment of diseases as well as state government activities which contribute to public health work without being within the administrative framework of the health department. The eleven chapters are on the composite pattern of state health services: communicable disease control by state agencies, tuberculosis control by state agencies, venereal disease control by state agencies, sanitation by state agencies, medical and dental care by state agencies, maternal and child health activities of state agencies, industrial health activities by state agencies, central state services affecting all branches of public health work and state health department organization. The information covers the District of Columbia, the territories of Alaska, Hawaii and Puerto Rico, and Virgin Islands.

The chief innovation, with some controversial implications, and of interest alike to practitioners of medicine and to the personnel of health organizations, is the content of chapter VI, dealing among other matters with general medical care of the needy. Of much concern are the extent and variety of activities contributing in some respect to the health and medical care of the population carried on by state agencies other than the health department.

This is a valuable, technical, well documented and well presented report of one of the major functions of state government for the civil population under peacetime conditions. However good a state health organization it cannot operate profitably in a vacuum that is, under conditions of local civil government which do not provide full time health services for which city, county, multicounty or district communities are responsible, and supported with adequate appropriations from tax resources. This is an important historical document revealing as it does the force and effect of the policy of the federal government to aid by money grants and control through standards of personnel and performance much of the health service within the states and their regional and county subdivisions. Students of sociology and civil government of contemporary history as well as workers and teachers of health administration, will find this interesting and essential reading. The chapters have appeared separately in *Public Health Reports* from time to time from Aug. 22, 1941 to April 2, 1943.

*The Role of Nutritional Deficiency in Nervous and Mental Disease*. Proceedings of the Association December 19 and 20, 1941. New York: Editorial Board: Stanley Cobb, M.D., Chairman; Edwin F. Gildea, M.D., and Harry M. Zimmerman, M.D., Research Publications Association for Research in Nervous and Mental Disease. Volume XXII. Cloth. Price \$4. Pp. 215 with 23 illustrations. Baltimore: Williams & Wilkins Company, 1943.

These sixteen papers by prominent laboratory and clinical investigators with a special interest in nutrition, the vitamins and the respiratory enzymes constitute a valuable, but not now complete, review of the role assumed by these factors in the metabolism of the nervous system as evinced especially by the neurologic manifestations of their deficiency. The book is divided into two parts, the first on contributions from the fundamental sciences, the second on clinical aspects. The ensuing discussions of the papers as they were read are also printed and constitute a valuable adjunct to the formal presentation of each subject.

In the section on contributions from the fundamental sciences Cowgill calls attention to some of the difficulties inherent in both animal and human nutritional studies, difficulties which have led some less restrained investigators into hasty publication of premature conclusions. Elvehjem reviews briefly some of the known and biochemically important interrelations between certain of the vitamins and the respiratory enzymes of which they function as the prosthetic group. The interesting observations of Himwich on the demonstrable reduction of cerebral arteriovenous oxygen difference in states of thiamine deficiency in man support the pioneer experimental work of Peters, Ochoa and others on the role of diphosphothiamine in cerebral metabolism. This paper is marred by the application of such unfortunate terms as "neurotic" and "neuroses" to avitaminotic patients and their symptoms. The original contribution of Ferrebee and his collaborators on the thiamine content of human tissues represents another important step toward the application of quantitative methods in the study of thiamine metabolism in man. Zimmerman reviews the neural pathology of the avitaminoses and includes some excellent photomicrographs. The pathology of vitamin A deficiency is discussed by Walbach and Bessey, and that of alpha-tocopherol deficiency by Pappenheimer. The work of these investigators in their respective subjects is well known.

The section devoted to clinical aspects will be of especial interest to those clinicians who have attempted a critical appraisal of the legitimate place of vitamins in medical therapy. It should be read by those who have not. Wilder's careful and protracted studies of induced thiamine deficiency, recorded elsewhere in greater detail by Williams and his collaborators, are reported and an illustrative case history is included. The patients studied, however, were inmates of a neuropsychiatric hospital, little information is given concerning their previous emotional histories, and the simple statement that the significance of the subjective symptoms which they developed over periods ranging from ninety-three to one hundred and ninety-six days of thiamine deprivation depends on the selection of "noncomplainers" does not invalidate the criticism that they represent a poor group on which to base generalizations concerning the emotional manifestations of thiamine deficiency. Spies reports the relief of states of emotional tension in pellagrins by administration of thiamine, and Schrell reviews briefly current observations on the mental and neurologic aspects of B complex deficiency. In an enlightening discussion of these three papers Smith cogently points out differences in the material studied, especially regional dietary differences, which must be considered in evaluating symptoms and the efficacy of specific treatment.

Strauss, leading heavily on Meiklejohn's inadequate review to question the role of thiamine deprivation in the production of nutritional polyneuritis, reviews briefly other major causes of the peripheral polyneuritides.

Of great interest to the clinician will be the paper of Bowman and Worts. These workers who with Jolliffe have segregated from other encephalopathies the dramatic syndrome, usually encountered in nutritionally deficient alcoholics of acute vitamin deficiency encephalopathy and who have demonstrated that the

ophthalmoplegia of Wernicke's syndrome is reversible by thiamine, discuss in some detail these syndromes and also the neurasthenia of thiamine deficiency, Korsakoff's syndrome, delirium tremens and the cortical dysfunction associated with acute peripheral neuropathy.

In a well tempered final chapter on the prevention of nutritive failure and its cure McLester rightly points to the critical importance of both economic and educational factors in determining the dietary of the nation. Likewise rightly he deplores the indiscriminate consumption of pharmaceutical vitamin preparations, which has reached such ludicrous proportions in recent years. In this connection the clinician should familiarize himself with the recent carefully controlled studies of Keyes, which tend to throw grave doubt on much earlier and less cautious work.

In summary, the chapters on the clinical aspects of nutritional deficiency in nervous and mental disease illustrate that much careful investigation remains to be done, that there is urgent need for new and sensitive laboratory techniques for the accurate determination of early nutritive failure, and that even now little is known about the vital interdependence of the vitamins of the B group.

The printing of this useful volume is excellent and marred by few errors. Xanthine, page 18, and trigonelline, pages 26 and 27, are misspelled. The National Research Council's recommended minimal daily requirement for niacin is erroneously printed as 18 mg instead of 18 mg on page 139.

**Hypertension. A Manual for Patients With High Blood Pressure.** By Irvine H. Page, A.B., M.D., Director, Lilly Clinic, Indianapolis City Hospital. Fabrikoid. Price, \$1.50. Springfield, Illinois: Charles C. Thomas, 1943.

An accurate and illuminating explanation of disease states written for patients is often a useful aid to practicing physicians. Such patient "manuals" are particularly helpful when dealing with chronic disorders. Almost all patients when first informed that they have hypertensive disease are pathetically bewildered by what it is all about. Furthermore, the popular concepts of "high blood pressure" are as confused and as full of false belief as Axis propaganda. Therefore this little book should prove most useful as an introductory primer for hypertensive patients. The author has wisely adopted a dogmatic method of presentation. Every statement is justified by clinical experience or sound experimental observations. Where recent discoveries are mentioned, the author cautions against their overenthusiastic or blindly credulous acceptance, the healthy skepticism of the scientist is evident. The text in no way intrudes on the role of the attending physician in the management of hypertension, it does not advise but merely informs.

Only two, relatively minor, adverse comments appear justified. The dogmatic simple factual approach causes the style to appear decidedly elementary. Such manner of presentation is not infrequently resented by educated and intelligent lay readers, no one likes to be "talked down to." Secondly, though the condensation of much material into such a short essay is admirable, one has the feeling that brevity is overdone. There are many paragraphs, such as those dealing with the socio-economic importance of hypertensive disease and the need for enhanced support for research, or the concepts of pathogenesis, and especially the importance of individualization in etiologic diagnosis and management, which could and should be considerably amplified. The condensation of material is such that only those fully acquainted with the problems of hypertensive disease can appreciate how much there is in this little book. The uninitiated, for whom it is intended, may miss much of the significance of the various aspects because of the extreme brevity.

As a primary manual for new patients with hypertension the volume can be recommended heartily. It is accurate, precise, neither alarmistic nor overly optimistic and answers many of the questions which such patients must inevitably ask. Thus it should save physicians much time. One of its most valuable attributes is that it should stimulate such patients to ask pertinent and intelligent questions. It should reduce the tendency to quackery and faddism now all too common in the so-called management of hypertensive disease. Patients who read and understand the section on diagnostic examinations will demand more thorough study than is usually undertaken.

**A Short Practice of Surgery.** By Hamilton Bailey, FRCS, Surgeon Royal Northern Hospital, London and R. J. McNeill Love, MS, FRCS, Surgeon Royal Northern and Metropolitan Hospitals. Sixth edition. Cloth. Price, 30s. Pp. 1,033, with 922 illustrations. London: H. K. Lewis & Co., Ltd., 1943.

The influence of the war is definitely imposed on this brief summary of surgical practice. This is by far the best edition of this standard English work. Former obsolete and outmoded concepts which appeared in reprinting after reprinting are gone, and in their places are features of genuine significance. Similar types of textbooks are rare in this country, the average standard work for students here is much more theoretical and undoubtedly superior for teaching purposes. The splendid illustrations on fine quality paper (surprising for a country hard pressed by war) are finer than in the average American textbook. A highly commendable feature is a brief biographic note which lends life to the abundant eponyms of which the British seem to be so fond. As is to be expected, traumatic conditions are especially well presented. Emphasis is laid on nerve injuries and injuries to the motor system generally, which are distinct problems in the present conflagration. The present edition admirably fills its intended purpose, and at times its very brevity is an asset.

**Physiology of the Nervous System.** By John Farguhar Fulton, M.A., D.Phil., M.D., Sterling Professor of Physiology, Yale University, New Haven, Connecticut. Second edition. Cloth. Price \$9. Pp. 614, with 112 illustrations. New York, London & Toronto: Oxford University Press, 1943.

The rapid advances in our knowledge of the physiology of the nervous system has led to a complete revision of this book. The author has conscientiously followed the current literature, evaluated the researches of others, included his own important work and incorporated all in what is virtually a new text. He has called on other workers to aid in expanding and clarifying certain chapters. A cooperative spirit has entered into the making of the book, thus greatly increasing its value. In presenting the most important recent advance in neurophysiology, namely the nature of synaptic transmission, the section was partly prepared by Dr. David Nachmansohn, one of the foremost investigators in the field. The original form of the book has been retained, with the useful historical introductions to each chapter. A smaller but clearer type has been used, and the references are now referred to in the text by author and year of publication. These and other changes make it more readable than ever before. The illustrations are clear, the bibliography and index excellent. The textbook, carefully brought down to date, sets a standard for a work of its type. If the first edition was considered a fundamental book, the second edition is of equal value.

**The Physiological Basis of Medical Practice. A University of Toronto Text in Applied Physiology.** By Charles Herbert Best, M.A., M.D., D.Sc., Professor and Head of Department of Physiology, University of Toronto, and Norman Burke Taylor, M.D., F.R.C.S., Professor of Physiology, University of Toronto. Third edition. Cloth. Price 55s. Pp. 1,942, with 497 illustrations. London: Baillière Tindall & Cox, 1943.

An accepted textbook of physiology again reaches a high standard of excellence, in this, the third edition. The impetus in medical research is especially reflected in physiology. It necessitates constant revision and a sifting process to present to the student simple and concise material. Best and Taylor have followed, as in previous editions, their concept of presenting physiologic facts as underlying clinical problems. A carefully selected bibliography and a wealth of digested material between its covers render it an unusual reference book for all practitioners of medicine. A careful perusal may lead to the conclusion that at times controversies as to theory have been taken up too fully. Thus fundamental and imperative physiologic facts may seem buried in a welter of detail. The section on blood clotting is a good example of how clearly an intricate mechanism can be described. Probably the important subject of shock has been undertreated. Chapters on the endocrine glands are typically illustrative of the authors' ability to present subjects with clarity in spite of the expanding state of knowledge regarding them. It is hoped that they will continue their admirable purpose and in further revisions maintain this book as a live vehicle for the presentation of physiology in the practice of medicine.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### VASECTOMY

**To the Editor**—A white man aged 29, diabetic and married, has four healthy children. Because he is diabetic and it is felt that there should not be more children, he wishes to be sterilized. I advised cutting the vas and told him it would not make any change in his sexual life except that he could not impregnate his wife. When the surgeon was consulted he informed the patient that he would lose 25 to 50 per cent of his sexual powers. Would you please give an opinion on the following questions? After the vas has been severed: 1 Will the sexual powers be changed? 2 From the brief history, is it the operation at all or should the wife be sterilized? 3 Will this tend to shorten his sexual life? Is there danger of infection and if so, if the infection is severe, will it leave him as if he were castrated? I might add that this couple have intercourse each night and practice withdrawal. MD Iowa

**ANSWER**—1 There is no convincing evidence to indicate that ligation of the vas deferens has any harmful effect on the sexual power.

2 There is a difference of opinion on whether the wife or the husband should be sterilized. There are some states that prohibit the sterilization of the male.

3 There is no evidence that vasectomy tends to shorten sexual life. There is always the danger of an infection when an incision is made, although in this particular type of operation the chances of an infection would be minimal if ordinary surgical antisepsis is maintained. The only way in which he could become a castrate would be for both testes to slough out completely as a result of the infection. This, although possible, would be one of the rarest of complications. The diabetes provided it is under proper management, would be no contraindication for operation.

### VINETHENE AND ETHYL CHLORIDE

**To the Editor**—Is vinethene a safer anesthetic than ethyl chloride for opening ear drums?

Harold L. Snow MD San Pedro Calif

**ANSWER**—The anesthetic properties of vinethene (vinyl ether, dimethyl ether, divinyl oxide) were first observed in 1930 (Leake, C. D., and Chen, M.-Y. 'Anesthetic Properties of Certain Unsaturated Ethers,' *Proc Soc Exper Biol & Med* 28:151 [Nov.] 1930). Ethyl chloride, on the other hand, was used for clinical anesthesia during the later decades of the past century and was studied carefully by Embley in 1902 and following. His experimental findings regarding ethyl chloride were published in detail in the American Yearbook of Anesthesia and Analgesia for 1917-1918, pages 140-152. His conclusions at that time were that it was "a relatively safe anesthetic agent if cardiac inhibition can be avoided." In 1930 Henderson and Kennedy (Ethyl Chloride, *Canad M A J* 23:226 [Aug.] 1930) reviewed the work of Embley and others, collected reports of twenty-six deaths or near deaths, and presented experiments of their own. They believed ethyl chloride to be a useful anesthetic demanding careful administration. Jacobs (Value of Ethyl Chloride in Extraction for Children, *J Am Dent A* 20:1060 [June] 1933) reported 149,528 administrations for dental extraction without a death.

Gelfan and Belf described the first clinical use of divinyl oxide in 1933. The Council on Pharmacy and Chemistry made a preliminary report on vinyl ether in 1934 (Vinyl Ether, *The Journal*, Jan 6, 1934, p 44) and another report entitled 'The Present Status of Vinethene' in 1937 (*ibid* Aug 28, 1937, p 656). The investigations of Goldschmidt Ravdin and others (Divinyl Ether, *ibid* Jan 6, 1934, p 21) are thorough and favorable to the safety of the agent. The report of Hawk, Orth and Pohle quite the opposite (Hepatorenal Syndrome Following Administration of Vinethene, A Case Report, *Anesthesiology* 2:388 [July] 1941).

No specific comparison of the safety of these two agents has been found in the literature. When properly administered ethyl chloride produces a pleasanter induction and has been considered by many to be relatively safe. It has been given to a large number of patients. Vinethene is on the other hand, a recent addition to the list of anesthetic drugs. From a review of the literature available at present vinethene might be considered decidedly the safer for short administrations such as

the incision of a drum membrane. In any event, an administrator possessed of knowledge of the particular agent and skill in giving it is a more important safety factor than is the drug which he elects to administer.

### SURFACE TENSION OF BLOOD PLASMA

**To the Editor**—I am interested in obtaining information concerning the surface tension of the blood and plasma especially drugs which will increase or decrease the surface tension. Any other information concerning alterations in the surface tension physiologic or otherwise will be greatly appreciated.

Roy J. Papkin Major M. C. A. U. S.

**ANSWER**—It is unfortunate that really complete studies of the surface tension of plasma have not been made. This lack is probably largely due to the complex nature of the problem. The surface tension of plasma varies with the age of the exposed surface, and measurements made using dynamic methods where these surfaces are new yield relatively high surface tension values. Others have used surfaces aged varying lengths of time. Since the surface tension varies with the age of the surface, it is little wonder that results from various methods are divergent. Many of the methods used deal with surfaces of indefinite age. This is especially true of the drop-weight method and to some extent of the ring (duNoüy) method. It would be of considerable value to study much more completely the change in surface tension with time for many of these systems, using a method especially suited to this type of investigation such as the static pendant drop method recently developed.

Values given by different workers for the surface tension of normal human serum vary from about 70 dynes per centimeter with the drop-weight method to about 55 dynes per centimeter with the ring method under conditions where the value for water is about 74 dynes per centimeter. Values for plasma appear to be somewhat larger (perhaps 75 dynes per centimeter by the drop-weight method).

Various conclusions have been reached concerning the surface tension in pathologic serums. In many pathologic serums values slightly lower than normal (2 to 5 dynes per centimeter) appear to be observed but even in any particular disease this result is not obtained by all workers. Thus syphilitic serums have been reported to give (1) a slight lowering of the average surface tension, (2) a definite increase and (3) very little difference from normal serums. A somewhat larger decrease in the surface tension value for syphilitic plasma has also been claimed. These results are representative of the uncertainties of these studies, and equally discrepant results are reported for other pathologic serums and plasma. It has been concluded by Dr duNoüy that true surface tension effects in living organisms are rare and of relatively little importance.

Changes in surface tension of serum due to various conditions have often been reported. A drop in surface tension (2 dynes per centimeter) within twenty minutes after eating followed by a rise to normal in about an hour, has been observed by several workers. A somewhat larger effect on the surface tension following the ingestion of allergenic foods has been observed by others. Feeding cholesterol to rabbits decreased the surface tension. Radioactive water also is said to give rise to a decrease in surface tension.

The surface tension of serum, and especially plasma, appears to be considerably lowered (drop-weight values by as much as 9 dynes per centimeter) in anaphylactic shock. Considerably smaller decreases have been observed following intravenous injections of bacterial proteins, epinephrine, acetylcholine, atropine and possibly histamine. Intravenous injection of normal human serum causes a slight decrease of the surface tension of rabbit serum. Injection of a small amount of octyl alcohol dissolved in dilute ethyl alcohol caused a pronounced decrease in surface tension of the serum lasting for only a few minutes. Repeated injection after a short time gave a stronger and more lasting effect. A third injection usually caused death. Benzopyrene, injected into human subjects and animals with tumors caused a decrease in serum surface tension. Bile acids and salts lower the surface tension of serum but several tenths of a per cent must be present to produce an appreciable effect. Heat inactivated serum also appears to have a lower surface tension than the fresh serum.

Use of parathyroid injection in rabbits caused an increase in the surface tension of plasma reaching a maximum in thirty minutes, followed by a decrease to normal taking six to forty-eight hours. An increase in surface tension was observed when horse serum was diluted with a solution of methylene blue. Pilocarpine has been reported to cause an increase in surface tension when injected intravenously.

Again it should be stated that these results are in many cases somewhat uncertain and that more adequate studies of the surface tension need to be made.



## RESISTANCE TO POLIOMYELITIS AND NUTRITION

To the Editor—Recently I have had under my care 3 patients with poliomyelitis. The first patient had typical spinal fluid findings, followed by paralysis of the inferior extremities and intercostal muscles and is still in the respirator. The second patient, whom I saw a few days later, was a cousin of the first child and had been intimately exposed to the first patient. I saw her twenty-four hours after the onset of fever and vomiting. Physical examination, blood count and urino were not diagnostic. A spinal puncture revealed 27 cells with a differential of 78 per cent polymorphonuclears and 22 per cent lymphocytes. This child was first given 1,000 mg of ascorbic acid intramuscularly and then 500 mg twice daily. The elevated temperature subsided completely after about two days and she has never shown any evidence of paralysis. The third patient is a 10 months old sister of the first patient and unquestionably has infantile paralysis. This child was seen about twenty-four hours after onset, with symptoms of fever, vomiting and irritability. Physical examination, blood count and urine were not diagnostic. Spinal puncture revealed a cell count of 55, with 80 per cent polymorphonuclears and 20 per cent lymphocytes. This baby likewise was given 1,000 mg of ascorbic acid intramuscularly on admission and 500 mg twice a day thereafter. She has had the same course as the second patient, that is, the elevated temperature subsided after about two days and there is no evidence of any paralysis. Has there been any research work done on the use of massive doses of vitamin C in the pre-paralytic stages of poliomyelitis? I realize that a great many cases do clear up without paralysis and that probably the two of my cases that did might have been cleared without the vitamin C.

M D, Texas

ANSWER—The relation of nutrition to resistance in poliomyelitis has received the attention of several investigators, but the results have been variable. Large doses of ascorbic acid were reported by Jungeblut to protect monkeys against intranasal inoculation with poliomyelitis virus, but Sabin was unable to confirm this observation. Toomey reports divergent results in vitamin D deficient animals and entirely negative results in vitamin A or vitamin B complex deficiencies. Sabin and his colleagues found no increase in susceptibility in frankly rachitic monkeys. Ward, Sabin, Najjar and Holt studied the urinary excretion of thiamine, riboflavin and nicotinic acid in a series of acute human cases and found no differences in excretion levels between the normal and poliomyelitis cases. The several human series in which the various known vitamins have been employed have been too small, inadequately controlled and too irregular in results to merit any conclusions.

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## EFFECTS OF TURKISH BATHS ON HYPERTENSION AND HYPOTENSION

To the Editor—What is the consensus as to the effect of Turkish baths in hypertensive and also hypotensive cases?

M D, New York

ANSWER—A consensus has not been formulated. As arterial hypertension exists because of arteriolar hypertonicity, with or without arteriolar sclerosis, the external heat of a Turkish bath causes a temporary reduction of the tension through peripheral vasodilatation. Extreme changes in environmental temperature are usually unwise for patients with hypertensive disease. The hazards from hot baths for such persons are threefold: 1. Too rapid and severe a reduction of the arterial tension during exposure to heat, inducing relative hypotension, thus predisposing to thrombotic occlusion of cerebral and/or coronary vessels, especially in the presence of associated arteriolar sclerosis and/or coincident arteriosclerosis. 2. Depression of the cardiac vigor (heat is often very depleting to those with reduced rebound of the arterial tension to levels higher than before the bath, after the exposure to heat has terminated. This last type of undesirable reaction is prone to occur especially in those with hypertensive disease in the spastic (pre-arteriolar sclerotic) stage. Though many people enjoy Turkish baths and are "relaxed" by them, these risks must be considered. There are many individual exceptions to such generalizations, and the only effective procedure is to observe the circulatory reactions of the individual during and especially after the bath. On the whole, they are best deleted from the routine habits of hypertensive patients. Lasting benefit is not to be expected at best.

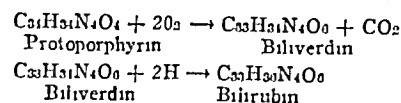
Arterial hypotension is, of course, aggravated by exposure to a hot environment. There may be, however, a beneficial reaction afterward. Here again each patient should be considered individually. Short cold plunges followed by brisk rubs are far more likely to be beneficial in hypotension. As a general rule Turkish baths are not well tolerated by either hypertensive or hypotensive patients.

## CHEMISTRY OF BILIRUBIN AND HEMOGLOBIN

To the Editor—Would you kindly give me a brief summary of what is known at present regarding the chemistry of bilirubin?

M D, Texas

ANSWER—Bilirubin is formed from hemoglobin mainly in the liver in the course of the destruction of the red corpuscles, but it is also formed in other tissues especially when the red corpuscles have left the vascular system and hence a local destruction of hemoglobin occurs. The chemical process involves the splitting of hemoglobin into globin (a protein) and protohematin (a porphyrin or tetrapyrrole derivative containing iron). In the next step the protohematin loses its iron, and iron free protoporphyrin is formed. The protoporphyrin ring structure is next modified by opening the ring with the loss of one carbon atom. The empirical formulas for the latter reactions are



It is obvious that biliverdin is an oxidation product of protoporphyrin as well as of bilirubin and that bilirubin is a reduction product obtained from protoporphyrin by the loss of one carbon atom. Bilirubin is still a tetrapyrrole, but it does not contain the ring structure of hemoglobin.

Bilirubin is a weak acid due to the two carboxyl groups. As such it is insoluble in water, but the sodium salts are soluble. The free bilirubin is readily soluble in chloroform and alcohol but soluble with difficulty in benzene or ether. The calcium salts are insoluble in water. Bilirubin is red, but when oxidized it is converted into blue and green pigments. This is the basis of the Gmelin nitric acid test for bile pigments. When treated with diazo benzene sulfonic acid (Ehrlich's diazo reagent) an intense red color develops. This is the basis of the Van den Bergh test.

## DIFFICULTIES IN DELIVERY OF TWINS

To the Editor—In a case of twin pregnancy with one breech and one cephalic presentation, if the breech is first to engage in the pelvis what are the probabilities so far as interlocking of the heads in the latter part of labor is concerned? Is the risk of interlocking under those circumstances sufficient to justify cesarean section without a test of labor?

Lindsay Peters, M.D., Van Nuys, Calif.

ANSWER—The likelihood of the fetal heads interlocking is more academic than real. In fifty thousand deliveries during the last seventeen years no such complication has ever occurred. This rare hazard in the delivery of twins certainly does not justify an elective cesarean section.

Difficulty encountered in the delivery of the first baby should excite suspicion of possible locking of the fetal heads. The patient should be placed in the Trendelenburg position and under deep anesthesia, the fetal heads can be palpated and, if necessary the second head can usually be dislodged from the pelvis. If this cannot be accomplished, it will be necessary to decapitate the first baby to allow the delivery of the second baby.

## PHYSICAL EFFICIENCY AND TOBACCO SMOKING

To the Editor—I have just read the strange statement of Dr. Segard on page 124 of The Journal of Sept. 11, 1943. If the doctor will examine the work of Wright and Moffat (The Journal Aug. 4, 1934, p. 118) and the work of Maddock and Collier (Ann. Surg. 68: 70 [July] 1933) he will find convincing proof of the constricting effects of nicotine on terminal blood vessels. If he will study the clinical work of Silbert in 350 cases of Buerger's disease (The Journal, Sept. 27, 1927, p. 964 and May 31, 1930, p. 1730), which was corroborated by Samuels (The Journal, March 7, 1931, p. 751, and Feb. 10, 1934, p. 436) he will have further convincing proof of these constricting effects, for the pathologic processes in Buerger's disease and coronary disease are identical and Buerger's disease occurs only in smokers, while coronary disease is six times as prevalent in smokers as in nonsmokers according to the clinical studies of English, Williams and Berkson of Mayo's. Doctors who smoke should be warned concerning the coronary constricting effects of tobacco particularly on increase in the shortness of breath. It is time that doctors, most of whom are heavy smokers, should take time out to read and study the works mentioned as well as the more recent work of Dr. Pearl of Johns Hopkins (Science 87: 216 [March 4] 1938) on comparative mortality rates.

F. L. Wood, M.D., Lynden, Wash.

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## THE PROGNOSIS OF ANGINA PECTORIS

A LONG TIME FOLLOWUP OF 497 CASES INCLUD  
ING A NOTE ON 75 ADDITIONAL CASES  
OF ANGINA PECTORIS DECUBITUS

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AND

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Despite the proverbial uncertainty of the outlook for life in the presence of angina pectoris, it is of distinct value in the practice of medicine to have some idea of average expectation in general, as well as at different ages and under various circumstances. It is helpful for the doctor to know something of this, as well as for the patient himself and for his family, rather than to leave merely the impression that prediction is impossible and that the Sword of Damocles may fall at any moment. Such a state of affairs is for many persons so paralyzing that they are prone to sit for many years awaiting the end, unable to carry on a useful or happy life, or else, hardened by the thought, they may lead a reckless existence which can in truth hasten their end.

Routine experience during the last decade having strongly suggested that the classic and often quoted average of five years or less of duration of life after the first attack of angina pectoris was erroneous, and the realization that this error if it exists is a very significant one in clinical medicine, have caused us to make a more complete and longer time follow-up of a larger number of cases of angina pectoris personally observed (P D W) than had previously been carried out. Accordingly we have made a follow-up analysis of the 500 consecutive cases of angina pectoris reported in 1931 by White and Bland<sup>1</sup>. A few observations have been added concerning 75 additional cases of angina pectoris decubitus.

The determination of the average duration of life after the beginning of angina pectoris as found by several observers in the last twenty-five years has presented a gradual increase, as shown in table 1. Herrick and Nuzum<sup>2</sup> in 1918 reported 200 cases. Of the 50 patients who died, the average duration to death was a little less than three years. No data were submitted on their

living patients, and the duration of their observation was not stated. Mackenzie<sup>3</sup> found 54 years to be the average duration to death of 214 patients he had followed to the end. He had records of 380 patients but no data on living patients were submitted. White<sup>4</sup> in 1926 studied 200 cases observed from 1920 to 1926. In the 66 in which death occurred the average survival period was 34 years. Of the 134 patients still living at that time the average duration of the disease was 46 years. The average of the dead and the living was 42 years. In 1931 White and Bland<sup>1</sup> brought the original 200 up to date and added 300 more, making 500 in all. Two hundred and thirteen were then dead, with an average survival period of 44 years. The average duration of the disease in the 273 still living was 51 years. Fourteen were untraced. The average duration of the disease in the living and the dead was 49 years. The period of observation extended from 1920 to 1931. Eppinger and Levine<sup>5</sup> in 1934 studied 141 fatal cases without stating the duration of the period of their observations. The average duration to death in their cases was 457 years.

### PRESENT STUDY

In order thus to secure more accurate data concerning the prognosis of angina pectoris than have yet been collected, we have made a new long time follow-up of White and Bland's old group of 500 cases. Every one of these cases has been traced and the present status of each is known. Of the 500 patients 445 are dead and 55 are living. The average duration to death for the 445 was 79 years. Three of the 55 living were finally deleted from the series after a careful review of their histories, which revealed a slight question of the accuracy of diagnosis. The average duration of the disease in the 52 living patients is 184 years. The average for both the living and the dead is 90 years to date (table 2). The duration of observation is from 1920 to 1943. No new cases were added after 1931. After correcting for the 68 dead patients who had symptoms prior to 1920, and for the 2 living patients whose symptoms began prior to 1920, the average duration to death became 70 years, and the average duration of the disease in the living became 180 years.

It is apparent that a long time follow-up of a large group of patients throughout the entire course of the disease provides the only accurate basis for prognosis. The key to the problem is the prolonged follow-up of all the living patients in any given group starting at

1 White P D and Bland E F. A Further Report on the Prognosis of Angina Pectoris and of Coronary Thrombosis. *Am Heart J* 7: 1 (Oct) 1931.

2 Herrick J B and Nuzum F R. Angina Pectoris. *Clinical Experience with 200 Cases*. J A M A 67 (Jan 1921).

3 Mackenzie James. *Angina Pectoris*. New York: Oxford Univ. Press, 1923.

4 White Paul D. The Prognosis of Angina Pectoris and of Coronary Thrombosis. J A M A 87: 1525 (Nov 6) 1926.

5 Eppinger C and Levine S. A. Angina Pectoris. *Clinical Considerations with Special Reference to Prognosis*. Arch. Int. Med. 44: 1 (Jan 1924).

scratch Only the continued addition of new patients to the series after the closing of the time interval set for the study can vitiate the results of the long time follow-up Only one source of error remains and that is the early death of a few patients perhaps in their very first attack of angina pectoris, this is doubtless

TABLE 1—Comparison of Average Durations in Angina Pectoris as Found by Several Observers

	Date	No of Cases	Average Duration		In Dead and Living	Duration of Observation
			To Death Years	In Living		
Herrick and Nuzum	1918	200	3 (50)	Not stated		Not stated
Muckenzie	1923	380	3.4 (214)	Not stated		Not stated
White	1926	200	3.4 (60)	4.0 (134)	4.2	1920-1926
White and Bland	1931	500	4.4 (213)	5.1 (274)	4.0	1920-1931
White, Bland and Miskall	1947	497	{7.0 (445)} {7.0 (377)}	{18.4 (52)} {18.0 (50)}	{0.06} {0.00}	1920-1947 (No new cases included since 1911)
Fppinger and Levine	1931	141	4.57 (141)	No living patients studied		

\* This figure should be a little higher, since a few cases of myocardial infarction alone were included

† Sixty-eight of the 445 dead patients had symptoms prior to 1920 totalling 577 years to death, 2 of the living patients had symptoms prior to 1920 totalling 53 years

a small error and one not applicable to a series of patients who actually consult their doctors for this particular trouble

One may not justifiably conclude from our findings that people with angina pectoris actually live longer than formerly In all probability they rather reflect more accurately the situation as regards prognosis that has doubtless always existed and quite possibly indicate also

TABLE 2—Duration in Years of Survival in the 497 Cases of This Series

Years	Dead	Living	Years	Dead	Living
Less than 1	25	0	17 to 18	8	5
1 to 2	28	0	18 to 19	4	3
2 to 3	37	0	19 to 20	0	2
3 to 4	33	0	20 to 21	5	7
4 to 5	29	0	21 to 22	2	3
5 to 6	30	0	22 to 23	4	3
6 to 7	30	0	23 to 24	1	4
7 to 8	26	0	24 to 25	1	0
8 to 9	20	0	25 to 26	2	0
9 to 10	23	0	26 to 27	0	0
10 to 11	16	0	27 to 28	0	1
11 to 12	27	0	28 to 29	1	0
12 to 13	17	0	29 to 30	0	0
13 to 14	24	0	30 to 31	0	0
14 to 15	18	5	31 to 32	0	0
15 to 16	15	5	32 to 33	0	1
16 to 17	17	11			
Total				445	52
Average duration to death (445 cases)				7.0 years	
Average duration in the living (52 cases)				18.4 years	
Average duration in the dead and living (497 cases)				9.0 years	

the importance of careful history taking to determine the very first date of the appearance of angina pectoris It may be true, however that treatment consisting in the main of more careful living over the periods of greater degrees of coronary insufficiency, may have also exerted a favorable influence

The same improved outlook in myocardial infarction has been afforded by prolonged follow-up of surviving patients Table 3 compares the average duration of life

as found by various observers The 32 dead patients of White's<sup>4</sup> group of 62 with myocardial infarction had an average duration to death of 1.3 years The average duration of survival of the 30 living patients was 20 years

In 1931 White and Bland<sup>1</sup> brought this group of 62 up to date and added 138 patients, making a total of 200 Of the 101 patients who had died, the average duration to death was 1.5 years In the 94 living patients the average duration of the disease was 3.2 years This study extended from 1920 to 1931 Ten years later, in 1941, Bland and White<sup>6</sup> followed up this group of 200 and found that for the 171 dead patients the average survival period was 3.4 years The average for the 29 living patients was 12.0 years Hence this study extended from 1920 to 1941 No new patients were added after 1931 Levine and Rosenbaum<sup>7</sup> in 1941 studied 372 cases of myocardial infarction The average duration to death for the 101 dead patients was 3.4 years The average duration for the 271 living

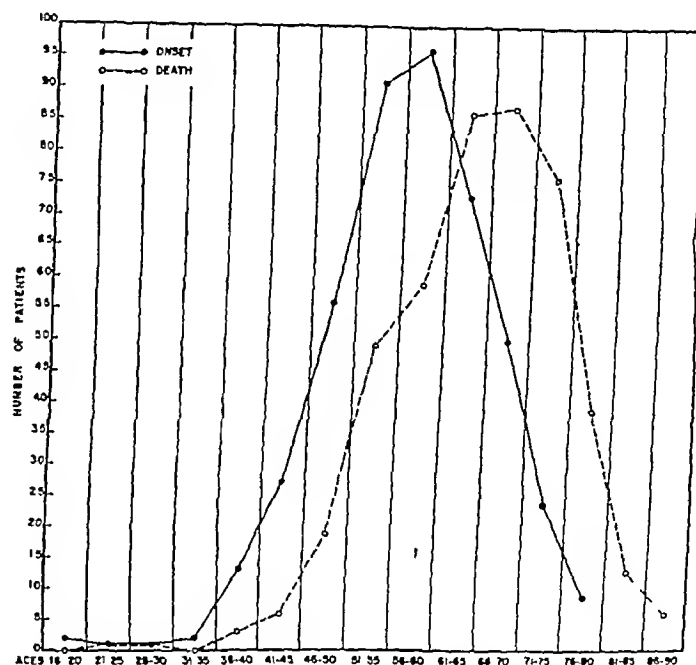


Chart 1—Frequency distribution curves of ages at onset and of ages at death for the 445 dead patients The average age at onset 56.5 years corresponds roughly with the peak of the curve in the questionnaire 56.60 The average age at death 65.8 years, corresponds roughly with the peak of the curve of the ages at death in the decade 61.70

patients was 2.3 years This short average duration in the living patients is evidently due to the short period of follow-up in the living

#### FURTHER DATA CONCERNING OUR 497 CASES OF ANGINA PECTORIS

Table 4 summarizes the data in the current follow-up analysis of our group of 497 patients with angina pectoris There were 377 males and 120 females Of the 445 dead patients, 340 were males and 105 were females The average age at onset for the entire group was 56.5 years That for the 52 still living was 51 years while that for 100 patients who died within three years was 59 years Three hundred and forty (76 per cent) of the 445 deaths were due to cardiac

6 Bland, E F and White P D Coronary Thrombosis (with Myocardial Infarction) Ten Years Later, J A M A 117 1171 (Oct 4) 1941

7 Levine, S A and Rosenbaum F F Prognostic Value of Various Clinical and Electrocardiographic Features of Acute Myocardial Infarction II Ultimate Prognosis Arch Int Med 69 1215 (Dec) 1941

causes—angina pectoris myocardial infarction, congestive failure. The remaining 105 deaths were due to infections, malignant disease, accidents and other non-cardiac causes. The average age at death was 65.8 years.

The distributions of the ages at onset and at death for the 445 dead patients are shown by the frequency distribution curves in chart 1.

In order to evaluate the significance of certain factors that are generally considered important in arriving at some conclusions as regards prognosis the data obtained on our first examination were assembled (table 5) in three groups: (1) the series of 497 as a whole, (2) 100 patients who died within three years and (3) 52 patients who have lived fourteen years or more. These factors are hypertension, myocardial infarction, cardiac enlargement, abnormal heart sounds, congestive failure and abnormal electrocardiogram. Briefly, the factors named occurred much more frequently in the group that died within three years than they did in the living group of 52 patients. None of the latter group had had con-

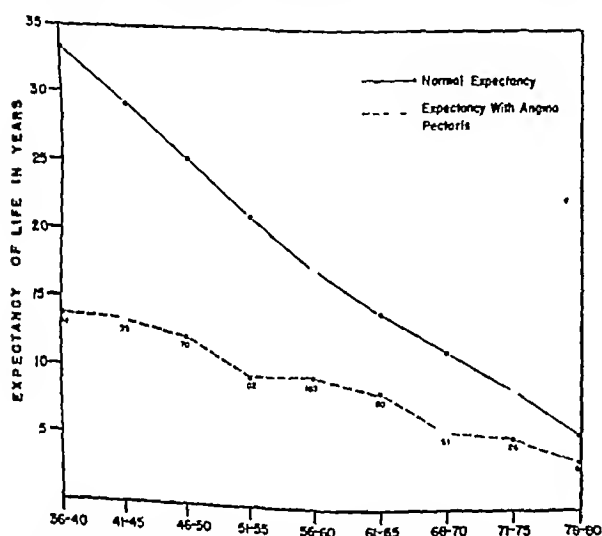


Chart 2—The expectancy of life for different ages with and without angina pectoris. The ages at onset by quinquenniums are shown along the abscissa. The number of cases of the present series with onset of angina pectoris during each five year age period are recorded along the broken line.

gestive failure at the time of our first examination, while 22 (22 per cent) of the group that died within three years had had congestive failure. Eighteen (34.6 per cent) of the living group had normal cardiac examinations (including normal blood pressure and normal electrocardiogram), only 9 (9 per cent) of the group that died within three years had normal examinations. The living group had a much greater incidence of pronounced nervous sensibility than those that survived three years or less. This seemed to indicate that a definite degree of nervous sensibility had a protective function. The more stolid phlegmatic person usually has more disease before he feels it; pays less heed to the subjective manifestations of coronary insufficiency and is more apt to overstep his physical limitations.

Chart 2 shows the expectancy of life according to age with and without angina pectoris.

#### NOTE ON ANGINA PECTORIS DECUBITUS

Since angina pectoris decubitus is generally considered to be a symptom of some gravity, one might expect to encounter the highest incidence of this severe

form of the disease in the group of 100 patients who survived the shortest period, that is, three years. However, only 23 (23 per cent) of those dying within three years had this type of pain when first seen by us, 103 (20.6 per cent) of the entire group had the decubitus occurrence of pain, while 5 (9.6 per cent) of the 52

TABLE 3—Comparison of Average Durations in Myocardial Infarction as Found by Several Observers

	Date	No. of Cases	Average Duration Years		In Dead and Living	Duration of Observation
			To Death	In Living		
White	1926	62	1.3 (32)	2.04 (30)	1.65	1920-1926
White and Bland	1931	200	1.5 (101)	3.2 (94)	2.4 (5 not traced)	1920-1931
Bland and White	1941	200	3.4 (171)	12.0 (29)	4.8	1920-1941
Levine and Rosenbaum	1941	372	3.4 (101)	2.3 (271)	2.6	From less than 1 yr to more than 10 yrs

living fourteen years or more had this type of pain. On the basis of these figures angina pectoris at rest (somewhat comparable to myocardial infarction itself) would not seem to be incompatible with long life. The average duration of the disease in these 5 patients still living is 18.2 years, which is practically the same as the duration in the entire group of 52 still living. The average duration to death in 98 of the 103 patients who had the decubitus type of pain was 7.6 years. This is only a shade less than the 7.9 years average for the 445 dead patients of the series.

In an additional group of 75 cases of angina pectoris decubitus observed from 1923 to 1943 there were 56 males and 19 females. These data are summarized in table 6. Forty-seven are dead and 28 are living. There are no significant differences in average ages at onset and at death between this group and our old group of 497 cases. The average duration of life after the onset of angina of effort was 5.6 years, but the development of angina decubitus signified that life on the average was

TABLE 4—Summary of Data on the 497 Patients with Angina Pectoris

	Total (497)	Dead Within 3 Yrs (100)	Living 14 Yrs or More (5%) (3 deleted)	Total Dead (445)
Sex				
Male	377 (75.6%)	81 (81%)	26 (69.2%)	340 (76.4%)
Female	120 (24.1%)	19 (19%)	10 (30.8%)	100 (23.6%)
Age at onset average	56.5	59	51	
Limits	20-80	24-80	25-72	
Age at death average				
				60.8
				Males 61.3
				Females 67.4
Average duration of life	9.06 (to date)		15.4	7.0
				Males 7.05
				Females 6.21

thereafter limited to 2.8 years. The follow-up of this group may continue over a considerable number of years as several patients have been added to it quite recently. We believe that angina decubitus like angina pectoris of effort, is for the most part an accompaniment of actual coronary occlusion but with a higher degree of coronary insufficiency, just short of gross myocardial infarction and frequently leading to it. Angina pectoris

decubitus resembles myocardial infarction itself in that it seems to be an acute or subacute condition and not a chronic one that shows little tendency to change from week to week or from month to month. Its greatest hazard, resulting occasionally in sudden unforeseen but perhaps preventable death, is undue activity over the

TABLE 5—*Angina Pectoris: Comparison of Data Obtained on Our First Examination on the Group of 497 Patients as a Whole with Data on 100 Dying Within 3 Years and with Data on 52 Patients Still Living 14 Years or More Since Onset*

	Total (497 Patients)	Dead Within 3 Yrs (100 Patients)	Living 14 Years or More (52 Patients)
Hypertension	182 (36.6%)	42 (42%)	7 (13.4%)*
Myocardial infarction	205 (41.2%)	51 (51%)	13 (25.0%)
Cardiac enlargement	337 (67.8%)	83 (83%)	21 (40.3%)
Abnormal heart sounds	226 (45.4%)	50 (50%)	10 (19.2%)
Congestive failure	77 (15.5%)	22 (22%)	0
Abnormal electrocardiogram (393 patients were electrocardiographed)	117 (23.7%)	32 (32%)	0 (0%)
Normal cardiac examination	74 (14.8%)	0 (0%)	18 (34.6%)
Nervous sensibility pronounced	239 (48.0%)	40 (40%)	34 (65.3%)
Severity of pain			
Uncertain	13 (2.6%)	4 (4%)	1 (1.9%)
Mild	120 (24.0%)	24 (24%)	21 (40.0%)
Moderate	161 (32.4%)	31 (31%)	19 (36.5%)
Pronounced	101 (20.3%)	18 (18%)	6 (11.5%)
Severe (decubitus)	103 (20.7%)	23 (23%)	5 (9.6%)

\* Only 1 patient had blood pressure above 170/110

few days or weeks during which the angina pectoris occurs at rest, at which time too much effort or excitement is permitted simply because there is no evidence of gross myocardial infarction.

An important consideration with respect to angina pectoris decubitus is the percentage chance of its progressing within a few hours, days or weeks to gross clinical myocardial infarction itself. Such an occurrence took place in 41 (or 54 per cent) of this group of 75 cases (within twenty-four hours in 22 and within three months in 19 more).

SUMMARY AND CONCLUSIONS

1 A follow-up study has been made in 1943 of 497 cases of angina pectoris that were first observed in the years from 1920 to 1930, and a few observations added

TABLE 6—*Angina Pectoris Decubitus: 75 Additional Cases Observed from 1923 to 1943*

	Total 75	Males 56	Females 19	Dead 47	Living 28
Number	75	56	19	47	28
Average age at onset of angina of effort or decubitus	57.9	57.1	60.7		
Limits		37-79	40-79		
Average age at death	63.9	62.2	68.6		
Limits		44-84	52-82		
Average duration to death after development of					
(1) Angina of effort	5.6	5.2	6.7		
(2) Angina decubitus	2.8	2.4	3.8		

on a supplementary series of 75 cases with angina pectoris decubitus.

2 A comparison of prognosis in angina pectoris and in myocardial infarction by several observers over the past twenty-five years establishes the fact that only by a long time follow-up including the living patients can an accurate basis for prognosis be determined. The

present study is the first (so far as we know) to present a large series of cases followed over an adequate length of time.

3 Of the 497 patients with angina pectoris 445 are dead and 52 are still living. The average duration to death of the 445 was 7.9 years, while the average duration from onset of the disease in the living is 18.4 years. The average duration to date for the combined dead and living is 9.0 years, which will ultimately increase when all the present survivors succumb, doubtless to a figure approximating ten years, a duration of life about double that at present widely regarded as the expectation of life after angina pectoris first appears.

4 Seventy-six per cent of the deaths were due to cardiac causes. Approximately one fifth of the entire group had normal cardiac examinations, blood pressures and electrocardiograms at the time of the first examination, and these patients as a rule lived longer. Such factors as hypertension, myocardial infarction, cardiac enlargement, abnormal heart sounds, congestive failure and abnormal electrocardiogram occurred much more frequently in the group that died within three years than in those living fourteen years or more. A pronounced degree of nervous sensibility was a favorable influence.

5 Angina pectoris decubitus was found in 103 (20.6 per cent) of the 497 cases. There were no significant differences in the average duration of the disease to death or in the living between this group and that of the group as a whole. In 75 additional cases of angina pectoris decubitus, life was relatively short after the onset of decubitus type of pain, averaging 2.8 years in 47 cases followed to death. However, the average duration of the precedent angina of effort brought the overall average duration of life close to that of the larger group. Gross myocardial infarction recognizable clinically followed angina pectoris decubitus within twenty-four hours in 22 of the 75 cases (29 per cent) and within a period of three months in 19 (25 per cent) more. The follow-up study of these groups should continue for a considerable period, which will doubtless further affect the prognosis.

6 A very important by-product of our follow-up study is the conviction, previously little more than a suspicion, that coronary heart disease, whether shown by the angina pectoris of temporary coronary insufficiency or by myocardial infarction with subsequent scarring, is actually in major part and in the majority of cases an acute or subacute rather than a chronic disease, though frequently with recurrence. The coronary artery damage may be permanent and therefore chronic, but its effect on the heart itself is the important point, thus coronary disease and coronary heart disease must be clearly differentiated. This conception of the frequent acuteness or subacuteness of coronary insufficiency is a vital one, of tremendous significance both in prognosis and in treatment. It is of course the natural tendency of the heart to establish an adequate collateral coronary circulation that is the answer. Special care over the periods of the acute and subacute phases of coronary heart disease replacing the old fatalistic point of view, is the most important part of the treatment of coronary heart disease, at times lost to view in the course of the introduction of new therapeutic measures.



## PSYCHOGENIC RHEUMATISM

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AND

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Psychogenic rheumatism was found to be the most frequent cause of disability in 450 consecutive cases diagnosed as arthritis or an allied organic condition previous to admission to the medical service of Hoff General Hospital.

By the term psychogenic rheumatism is meant those states in which symptoms such as pain, stiffness, subjective sense of swelling or limitation of motion in the muscles or joints are caused, intensified or perpetuated by mental influences. When disability results from such a state in the complete absence of structural joint or muscle abnormalities the condition is designated as "pure" psychogenic rheumatism. When incapacitating psychogenic symptoms are associated with nondisabling organic changes the psychogenic rheumatism is considered to be "superimposed."

We are aware of many of the dangers and pitfalls involved in explaining physical symptoms and more particularly physical signs on a psychogenic basis. Our experience with rheumatic patients in an army general hospital, however, has led us to the opinion that sufficient attention has not been paid to the influence of the emotional factors in the production of somatic symptoms in the musculoskeletal system. This has been made evident by the large number of patients admitted to the arthritis wards with organic diagnoses in which inadequate or no structural changes existed in the muscles or joints. While functional states in the fields of neurology, cardiology and gastroenterology have been increasingly recognized, the concept of psychogenic rheumatism has not been widely appreciated.

Our patients were obtained largely from station hospitals whose policy is to transfer to general hospitals cases refractory to treatment and those which are likely to become chronic. Our statistics, therefore, do not necessarily reflect the incidence of psychogenic rheumatism among soldiers with disabling rheumatic complaints in all army hospitals. Four hundred and fifty consecutive patients admitted with the diagnosis of arthritis and allied conditions, including patients with backache, were classified and analyzed (table 1). Of the wide variety of rheumatic diseases observed, pure psychogenic rheumatism was more often responsible for peripheral joint and muscle symptoms than were any of the commonly recognized disorders including rheumatoid arthritis, osteoarthritis and acute rheumatic fever. It also constituted one of the most frequent reasons for complaints referable to the back. Table 2 indicates that in 1 out of 5 rheumatic patients the symptoms were purely on a psychogenic basis while 1 out of 7 was disabled by psychogenic factors superimposed on mild organic pathologic changes. Approximately one third of the patients in the entire series were considered incapacitated because of psychic difficulties.

From this group we have undertaken to study, as internists, 50 cases of psychogenic rheumatism in some detail. We have been interested largely in the correlation of such information as might help clinically in evaluating rheumatic complaints rather than in the search for underlying psychologic mechanisms. Patients

with rheumatism based on organic disease and with associated mild psychoneurotic symptoms were not included. Only those cases in which psychogenic muscle and joint complaints were sufficiently severe to prevent the satisfactory performance of military service were considered.

## STATISTICAL SURVEY

**Classification**—Twenty-eight of the 50 patients had no objective evidence of muscle or joint disease and were regarded as examples of pure psychogenic rheumatism. Eighteen had minor nondisabling structural changes, and 4 patients had a persistence of an incapacity after all physical manifestations of an observed organic process had completely subsided.

TABLE 1—Classification of 450 Consecutive Admissions for Arthritis and Allied Conditions

Peripheral joint complaints		209
Psychogenic rheumatism (pure)	60 (22.3%)	
Rheumatoid arthritis	56 (26.8%)	
Osteoarthritis (primary and secondary)	40 (14.9%)	
Acute rheumatic fever	38 (14.1%)	
Unclassified arthritis	30 (13.0%)	
Rheumatoid ?	11	
Gonorrheal ?	10	
Rheumatic fever ?	7	
Non-specific synovitis ?	7	
Fibrositis	14 (6.2%)	
Gonorrheal arthritis	8 (3.0%)	
Gout	5 (1.8%)	
Miscellaneous types	13 (4.8%)	
Back complaints		181
Psychogenic rheumatism (pure)	32 (17.7%)	
Unstable back syndromes (strain, congenital anomaly, scoliosis, spondylolisthesis)	61 (33.7%)	
Rheumatoid ankylositis and spondylitis	30 (16.2%)	
Osteoarthritis	18 (9.9%)	
Fibrositis	12 (6.6%)	
Osteochondritis juvenilis dorsalis	12 (6.6%)	
Ruptured intervertebral disk	13 (7.1%)	
		450

TABLE 2—Incidence of Psychogenic Rheumatism

		Pure	Superimposed	
	Total Psychogenic Cases	Rheumatism	Rheumatism	Total
Peripheral joint complaints	209	60 (22.3%)	16 (5.9%)	76 (28.2%)
Back complaints	181	32 (17.7%)	46 (25.4%)	78 (43.1%)
Total cases	450	92 (20.4%)	62 (13.8%)	154 (34.2%)

**Miscellaneous Information**—Military service prior to hospitalization ranged in this group from one day to seven years. The average military service was about nine months, and over one third of this time was spent in army hospitals. Nearly 60 per cent had two or more periods of hospitalization before admission to a general hospital. The physical development was considered as average in 25, as inferior in 18 and as superior in 9. In all cases the sedimentation rate was within normal limits. Slightly more than half of these soldiers were married. The incidence of psychogenic rheumatism in enlisted men seems to be unrelated to age, rank, previous occupation, intelligence or education.

**Previous History of Rheumatism or Injury**—Thirty-eight patients gave a history of peripheral joint or back symptoms prior to entry into military service. Nineteen of these dated their disability to an injury and 7 gave a clear description of previous inflammatory joint disease. Twelve others claimed to have had a preceding arthritis involving one or more joints but

their descriptions of the antecedent illnesses were too vague to allow proper evaluation. Five of the 38 patients stated that they were incapacitated at the time of induction.

*Family History of Rheumatism*—Twenty patients, or over one third of the series, gave a history of invalidism or semi-invalidism from rheumatism in one or more members of their immediate families. Frequently a parent, a brother or a sister had been crippled with arthritis for years. Occasionally the patient referred his symptoms to the same joint or extremity that was involved in the relative. Several remarked that they suffered from rheumatism and nervousness “just like” their father or mother.

*Location of Symptoms*—The sites of election for symptom fixation were predominantly the back and lower extremities (table 3). In 38 of the 50 cases symptoms were limited to these regions. While the lower extremities were involved alone in 11 cases, the upper extremities were the sole site of somatic fixation

TABLE 3—Location of Psychogenic Rheumatism in Soldiers

Back (only)	17
Cervical	0
Dorsal	5
Lower	14
Back (plus)	13
Upper extremities	1
Lower extremities	10
Multiple joints	2
Lower extremities (only)	11
Hip	3
Knee	10
Ankle	6
Foot	3
Whole leg	7
Sclatic distribution	2
Multiple peripheral joints	8
Upper extremities (only)	1
Shoulder	0
Elbow	0
Wrist	1
Hand	1
	50

in only 1 instance. Complaints were present in practically all joints in 8 cases. There was no striking predilection for psychogenic symptoms to involve the left side in this group. Of the 16 cases showing laterality of symptoms, the involvement was right sided in 7, and left sided in 9.

*Emotional Factors*—The majority of patients had definite psychoneurotic manifestations before entry into military service. Seventeen, or approximately one third of the patients, gave a history of disabling psychoneurotic or hysterical episodes prior to the onset of the presenting complaint. These ranged from attempted suicide to interruptions in schooling because of “nervousness.” Many gave a history of enuresis, somnambulism, nightmares, temper tantrums or other symptoms looked on as constituting personality and behavior problems. At the time of examination 28 presented an anxiety state of greater or lesser degree. Sixteen patients showed mild mental depression with anxiety, and in 8 the attitude was that of happy indifference.

Forty-six of the 50 patients had definite associated psychoneurotic symptoms in addition to the rheumatic complaints. Almost all of the common emotional features which characterize the psychoneurotic state were

observed in this series. The 4 patients without demonstrable associated psychoneurotic symptoms presented striking incongruities between the organic findings and either the severity or the quality of the complaint. With each patient attempts were made to elicit the immediate precipitating emotional factors incident to the development of the disability, but these efforts were not always successful.

*Presenting Disability*—In the peripheral group the most frequent symptoms were pain, stiffness, limitation of motion, subjective sense of swelling and weakness of the involved part. Pain was universally complained of and was usually augmented by some physical activity incident to military service and was often qualitatively of the functional type. Such sensations as numbness, tingling, pricking, weakness, burning, deadness or fullness were frequently interpreted as pain by the patient. Approximately one half of the patients described stiffness and a subjective sense of swelling. Fifteen presented bizarre limps, some associated with abnormal postures which in themselves were sufficient to cause pain and muscle spasm. All the patients with backache complained of pain and stiffness. Frequently the discomfort, after close questioning, became a weakness, a tired feeling, a dead or numb sensation or a localized burning in some region of the back, especially the lumbosacral area. Back rigidity, variable in degree, was common, although true restriction of motion was rare. During the examination it was frequently evident that the apparent immobility was due to pain on forced motion and muscle spasm rather than to structural changes.

By far the outstanding characteristic in the patients with psychogenic backache was the persistence of the disability in spite of prolonged bed rest. Continuous night and day discomfort, refractory to bed rest and physical therapy and augmented by slight physical exertion, was typical. The degree of incapacity may occasionally approach satire as when a patient with advanced active rheumatoid spondylitis was found pushing another with pure psychogenic backache to the post exchange in a wheel chair. There were 4 examples of camptocormia in the group. Of the entire series 5 cases demonstrated anesthesia or hypesthesia of the hysterical type, and there were 2 cases of associated hysterical paresis of an extremity.

*Disposition*—At least 46 of the 50 patients were eventually discharged from military service. Several were given a trial at duty on a limited service status. Except for 4 cases which we have been unable to follow, such experiments have been uniformly unsuccessful. Patients sent to duty returned to the hospital anywhere from four hours to three months with the same or intensified symptoms.

COMMENT

We hold no brief for the concept that organic joint disease, such as chronic rheumatoid arthritis, may result from psychic conflicts.<sup>1</sup> In view of the absence of sound supporting evidence, such a thesis seems entirely unwarranted. While being cognizant of the fact that a psychoneurotic state may be kindled by a chronic illness such as arthritis, we do not support the theory that mental factors are etiologically related to inflammatory joint disease.

1 McGregor, H. G. Psychological Factor in Rheumatic Disease. J. Roy. Inst. Pub. Health & Hyg. 4: 169-179 (July) 1941. Weiss, Edward, and English, O. S. Psychosomatic Medicine. Philadelphia: W. B. Saunders Company, 1943.

Although there are no available statistics to indicate the prevalence of psychogenic rheumatism in the civil population proper emphasis does not appear to have been placed on the psychic factors which operate in patients with rheumatic complaints. Strecker<sup>2</sup> in estimating the relative frequency of functional disorders in the various systems places the musculoskeletal system last on the list. While this may be true in civilian practice, disabling psychogenic complaints as observed in an army general hospital are displayed frequently in the joints and muscles and are comparable to their occurrence in the gastrointestinal and cardiovascular systems. It is of interest that our statistics parallel those compiled by Halliday<sup>3</sup> in compensation insurance cases. He found the disability due to psychogenic factors in 37 per cent of 62 insured patients labeled with the diagnosis of rheumatism.

Without entering into a discussion of the many complex psychologic explanations offered for the localization of psychogenic symptoms two points are worthy of consideration. First somatic fixation usually bears an expedient relationship to the attempted solution of an emotional conflict. This may explain the predominant localization of psychogenic musculoskeletal symptoms in the back and lower extremities in soldiers. As these structures are synonymous with marching and soldiering, the development of an infirmity in such parts may be an unconscious attempt to solve the desire for separation from military service. Secondly localization of fixation is often dependent on a vivid recollection or experience. One third of our patients had glaring examples of arthritic invalidism in their immediate families. Approximately three-fourths gave a recent or remote history of traumatic or inflammatory joint disease in their past lives. In times of great emotional stress these recollections or experiences may act in a persuasive manner to influence the selection of a site for symptom formation. The following cases are illustrative.

A 31 year old private with a profound limp complained of pain and stiffness in the region of the left hip. His first symptoms appeared during the course of an acute anxiety state at about the time of induction. During the succeeding eleven months the disability was progressive and finally he was unable to walk for distances greater than one half mile. No organic basis for his complaints was demonstrated. His attitude was anxious and tense, and multiple associated minor psychoneurotic symptoms were volunteered. Questioning revealed that in childhood he had been operated on for tuberculous cervical lymphadenitis and subsequently he had feared that the infection might settle in a joint. It seemed significant that he had been reared by an aunt who had been crippled with tuberculous arthritis of the left hip since childhood.

A 24 year old private with approximately one year of service was admitted with the diagnosis of arthritis of the left hip and knee. He complained of pain and stiffness in these joints together with weakness and numbness of the leg. He had a bizarre limp and with each step threw the knee outward. He was resentful for having been drafted and candidly admitted his dislike for military discipline. No organic findings were elicited. Associated psychoneurotic manifestations such as fatigability, nervousness, insomnia, photophobia and sighing respirations were prominent. Three years previously the soldier had developed left leg pain following an injection of bismuth into the hip. The disability had persisted for a period of four months but subsequently no further discomfort in the leg had been experienced until the onset of the present disability two weeks after induction.

In practically all instances in our series a psychoneurotic predisposition was present and in over one third of the cases previous incapacitating psychoneurotic episodes had developed during civil life. It is not surprising that such a group should substitute bodily distress for the emotional conflicts growing out of the severe stresses incident to military service and to the transition from civil to army life. The following case is illustrative.

A 37 year old private complained of continuous low back pain. He had been hospitalized for eight of his nine weeks of military service. His discomfort allegedly was so great that he could do nothing which entailed physical activity. His back was held rigid during examination and he complained bitterly of any attempted back motion. His hands and feet dripped with perspiration, and the outstretched fingers were coarsely tremulous. He complained of headache fatigue and 'throbbing eyeballs'. Roentgenograms of the spine showed minimal congenital lumbosacral asymmetry. He had sustained a minor back injury in an automobile accident two years prior to induction. Although there had been no head injury at the time compensation was received for eight months because of a persistent hemianesthesia which included the face and which was demarcated exactly at midline.

The immediate precipitating emotional cause is often difficult to elicit. This is as true in civil life as in military practice. The factors which induce anxiety states in soldiers are manifold. Some are peculiar to military service and include (1) the loss of security or love caused by separation from a wife family or home (2) the loss of ability to control one's personal destiny (3) resentment at authority especially when such is invested in those felt to be inferior (4) fear of bodily harm (5) the confusion resulting from strange surroundings crowding, regimentation and competition and (6) the concern for the safety and financial well being of dependents. In the following case an exciting emotional factor is illustrated.

A 24 year old corporal with over two years' military service was admitted with the diagnosis of post-traumatic arthritis of the right ankle which allegedly resulted from a minor sprain sustained three months previously. The objective manifestations had entirely disappeared within three weeks but pain on weight bearing and a pronounced limp persisted. There were no physical or roentgenographic evidences of arthritis. His organization had been placed on alert for embarkation soon after the joint injury was sustained. After repeated questioning it was revealed that the soldier had a deeply rooted fear that insanity would develop if he was subjected to combat. The soldier's father had been confined to a veterans' institution for twenty-five years because of insanity which allegedly resulted from shell shock during World War I. The pain and limp completely disappeared within one week after the soldier was assured of separation from military service.

The diagnosis of psychogenic rheumatism is facilitated by the recognition of certain points at the time of examination or during the period of observation. These include (1) gross incongruities between the quality or severity of the symptoms and the structural changes (2) persistence of the disability (3) qualitative functional characteristics of the presenting complaint (4) bizarre postures or limps and (5) the association of other hysterical or psychoneurotic manifestations. The following cases exemplify these factors.

1. *Incongruity between quality and severity of symptoms and structural changes.* A 28 year old private with six weeks of military service was admitted with the diagnosis of arthritis of the right knee. He presented a profound bizarre limp favoring the right leg and complained of a continuous 'burning' in the

<sup>2</sup> Strecker, E. V. The Leaven of Psychosomatic Medicine. *Ann Int. Med.* 18: 736-40 (May) 1943.  
<sup>3</sup> Halliday, J. I. Psychological Factors in Rheumatism. *Prelim. Study Brit. Med. J.* 1: 213 (Jan. 30) 264 (Feb. 6) 1947.

right knee. The onset of symptoms was dated to an injury sustained five years previously when he fell from a hay loft. Allegedly he had limped persistently since this injury. The family history revealed that his father was incapacitated because of arthritis and was receiving a disability pension. The patient had been emotionally unstable since childhood and had frequent enuresis until the age of 16 years. He was tense and apprehensive, had cool, moist hands and tremor of the outstretched fingers and of the eyelids, and volunteered a deep anxiety caused by separation from his wife, who was pregnant. On examination the right knee presented no objective abnormalities except perhaps some increase in crepitus on forced motion. The joint was held rigid and the patient cried with pain on attempted manipulation and deep palpation. Roentgenograms revealed minimal osteoarthritic changes on the posterior surface of the patella and some sharpening of the tibial spines. Neurologic examination disclosed a band of complete anesthesia 3 inches in width around the circumference of the knee joint.

**2 Persistence of the disability.** A 24 year old sergeant was admitted with the diagnosis of arthritis of both knees. He had been hospitalized for four months at a station hospital. From the history and records it seemed apparent that the soldier had developed an acute synovitis of both knees which occasioned his entry into the station hospital. At the onset the knees had been swollen, tender and hot, and moderate joint effusion had been present. The sedimentation rate had been 34 mm in one hour, and on joint aspiration clear amber fluid had been removed. The effusion and inflammatory signs had spontaneously disappeared completely within six weeks. No residual joint deformity or restriction of motion resulted. The sedimentation rate had returned to normal, and repeated roentgenograms of the knees failed to reveal structural joint abnormality. Aching in the knees, at rest as well as on weight bearing, persisted and the patient restricted his walking to the distance from the bed to the toilet. Discomfort was complained of on palpation and on passive motion of the joints. He was restless and irritable and suffered from insomnia. Under observation, a train of associated psychoneurotic symptoms gradually unfolded. In spite of repeated reassurance the soldier persisted in the conviction that he was destined to remain "crippled" and would be of no further useful military service.

**3 Qualitative functional characteristics.** A 42 year old officer was admitted with the diagnosis of osteoarthritis of the spine. He had had no symptoms referable to the back or peripheral joints until three months prior to admission, when he sustained a minor back strain while helping to lift a "jeep." The only immediate discomfort experienced was slight aching and stiffness in the lower part of the back. Roentgenograms of the spine were taken, and subsequently the officer was informed that he was suffering from arthritis. Soon he developed a persistent mid-dorsal and low back pain together with stiffness in the lower back. Examination revealed the back to be objectively normal. The roentgenograms showed the characteristic changes of a mild healed osteochondritis juvenilis dorsi. Detailed questioning revealed that qualitatively the pain consisted of two areas of "burning and tingling," each the size of a 50 cent piece (30 mm). One was located over the right sacroiliac joint and the other just medial to the angle of the right scapula. Both the stiffness and the "pain" disappeared with simple reassurance.

**4 Bizarre posture.** A 28 year old corporal with eight months of military service was admitted with the diagnosis of severe lumbosacral strain. He complained of continuous mid and lower back pain and a progressive forward bending of the back of four months' duration. He had a hunted look, was tense and presented a myriad of associated psychoneurotic symptoms. Examination revealed a pronounced stoop, the forward bending being from the hips and the trunk being held at about a 120 degree angle. The back was held rigid, the paravertebral muscles were decidedly spastic and any attempt to extend the trunk was exceedingly painful. He could straighten his back perfectly in the recumbent position. The past history and the events leading to the development of the camptocormia can only be sketched. He had spent two years in a penitentiary between the ages of 18 and 21 years because of larceny. After release

he held jobs in various states as an oil field worker, was married and had one child. From all available information he had remained a good citizen and had no further police record. In every new location in which he worked his prison record eventually became known. Consequently he had moved from job to job. Two years prior to induction he had injured his back during a fall from an oil derrick. He was hospitalized and received compensation for a period of four months. He had not been incapacitated subsequently but periodically had noted mild low back discomfort and stiffness. On induction into the service he had welcomed the opportunity to make good and finally to get away from his criminal record. He received the rating of corporal after four months and decided to take examinations for Officers' Candidate School. In the course of making such application the question of his penitentiary record came to light. He was bluntly told that an ex-convict could not become an officer, and his prison record became known to other soldiers. The patient became depressed and developed back pain and a progressive forward stoop. With psychotherapy, which included assurance that he would be separated from the service, the posture gradually became normal. Two similar cases of camptocormia were reported from the medical service of this hospital by Hamlin.<sup>4</sup>

**5 Associated hysterical manifestations.** A 34 year old private of American Indian parentage with two years' military service was admitted with the diagnosis of arthritis of the right wrist and fingers. He complained of pain, stiffness, weakness and a sense of swelling in the right wrist and the metacarpophalangeal and proximal interphalangeal joints of the right hand. He had worked as a laborer on road construction in the North Pacific area for several months. After his return to the United States he applied for a furlough in order to visit his wife, who had been ill. The furlough request was refused, and three days later the disability ensued. His attitude was cheerful and he smiled while complaining of the pain provoked by forced motion of the allegedly involved parts. There was no objective or roentgenographic evidence of joint disease, but neurologic examination revealed a complete anesthesia to pain, temperature and touch of the glove type extending from the finger tips to 4 cm below the tip of the right shoulder. Reassurance and a promise of furlough brought about considerable improvement in the symptoms. For administrative reasons the furlough was again denied and within forty-eight hours the joint complaints and anesthesia returned to their original intensity.

We agree with Halliday<sup>5</sup> that many patients complaining of stiffness and aching in the muscles and joints who are considered to have fibrositis are actually victims of psychogenic rheumatism. In the light of our experience we find difficulty in accepting the incidence of fibrositis in soldiers as reported by certain English physicians. For example, Copeman<sup>6</sup> reported that, of the first hundred rheumatic cases admitted to a general hospital in France in 1940, 70 per cent were diagnosed as fibrositis. Hutchison<sup>7</sup> studied 78 patients with rheumatic disease admitted to a British military hospital and considered 69.2 per cent to be suffering from fibrositis. These figures are in sharp contrast to those compiled by us (table 1). The diagnosis of primary periarticular or intramuscular fibrositis was made in 5.8 per cent of our cases. We have ventured the diagnosis of fibrositis only when a typical history has been elicited in an emotionally stable individual. In the absence of significant organic changes it is always diffi-

<sup>4</sup> Hamlin, P. G. Camptocormia. Hysterical Bent Back of Soldiers. Report of 2 Cases, *Mil. Surgeon* 92: 295-300 (March) 1943.

<sup>5</sup> Halliday, J. L. Concept of Psychosomatic Rheumatism, *Ann. Int. Med.* 15: 666-677 (Oct.) 1941.

<sup>6</sup> Copeman, W. S. C. cited by Hench, P. S., Bauer, Walter, Boland, E. W., Dawson, M. H., Freyberg, R. H., Holbrook, W. P., Key, J. A., Lockie, Maxwell, and McEwen, Currier. Rheumatism and Arthritis. Review of American and English Literature for 1940, *Ann. Int. Med.* 15: 1002-1108 (Dec.) 1941.

<sup>7</sup> Hutchison, J. H. Nonarticular Rheumatism in the Army. Symptomatology, Etiology, Treatment. *Glasgow M. J.* 137: 33-42 (Feb.) 1942.

cult to evaluate symptoms of aching and stiffness especially when these are located in the back. We have considered a more or less typical "jelling" character of these symptoms i.e. aggravation by periods of physical inactivity, dampness or weather changes and relief by moderate exercise or heat as necessary criteria. We believe that improper evaluation has often been placed on the fatigue and nervous irritability which is said to accompany fibrositis so frequently. In many instances it is probable that these symptoms are but part of a neurasthenic state in which aching and stiffness serve as the predominant psychogenic manifestations. The evaluation of the patient's emotional make-up, the recognition of associated psychoneurotic complaints and the finding of a precipitating psychogenic factor have aided us in differentiating between fibrositis and psychogenic rheumatism.

One comment that is frequently heard is to the effect that many of these patients are malingerers and should be made to work. Malingering involves the conscious feigning of an illness to avoid duty and as such is punishable in the army by court-martial. In our experience true malingering has been uncommon in contrast to the frequency with which somatic symptoms develop unconsciously as a means of escape from the unpleasant things associated with military service.

Our attempts to salvage these patients with psychogenic rheumatism and to return them to either full or limited duty have been largely unsuccessful. In many instances the only solution rests in the removal of the underlying mental conflict which can be accomplished by separating them from military service. In others the underlying emotional make-up is so poor and the associated psychoneurotic manifestations are so definite that rehabilitation for military service would be neither feasible nor advisable. In certain instances however, mild somatic symptoms have become intensified and fixed because the psychogenic nature of the illness has not been recognized soon enough. It is hoped that more prompt recognition and proper psychotherapy instead of physical therapy will prevent some of these psychogenic rheumatism casualties.

8. Farrell M. J. and Kaufman M. R. A Compendium on Neuropsychiatry in the Army. Army M. Bull. April 1943. No. 66 pp. 1112.

**Types of Injury Produced by Electric Currents**—It is necessary to differentiate sharply between the forms of electrical energy in studying their effects on the tissues. High frequency alternating currents of different varieties (damped unterminal, bi-terminal and undamped) produce their effects essentially through the production of heat in the electrical field. The effect varies with the character of the current. Passage of the current may produce only a moderate rise in the temperature of the field without permanent injury to the tissues (diathermy). The temperature of the whole body may be elevated in this way through the distribution of the heat so generated throughout the body by the circulating blood and tissue fluids. Currents of high frequency but otherwise of a different character are capable of destroying tissue, a principle applied in surgery in the use of the electric knife. Currents of this type through the passage of electrical discharges from suitably shaped electrodes produce (1) complete disruption of tissue through molecular changes as in fulguration (2) a peculiar dehydration of the tissues through what is called desiccation or (3) a complete death of the tissue through its coagulation and (4) a knifelike severance of the tissues spoken of by some as acusection. All these therapeutic forms of electric energy have their virtues and their faults, which must be read about in treatises on electrotherapy and clinical surgery.—Forbus Wiley D. Reaction to Injury. Baltimore: Williams and Wilkins Company, 1943.

## PREFRONTAL LOBOTOMY IN CHRONIC SCHIZOPHRENIA

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The operation of prefrontal lobotomy for certain mental disorders was introduced by Egas Moniz<sup>1</sup> of Lisbon, Portugal, in 1936. He published results in 20 cases of which 7 were classed as recovered, 7 as improved and 6 as not benefited. The best results appeared in cases of depression, the poorest in schizophrenia.

Freeman and Watts<sup>2</sup> who introduced the procedure in this country in 1936, deserve the credit for the development of current interest in this method. Since 1936 the procedure has been tried by Tarumianz<sup>3</sup>, Strecker, Grant and Palmer<sup>4</sup>, Lyerly<sup>5</sup>, Love, Schrader<sup>6</sup>, Peterson and Buchstein<sup>7</sup>, among many. They have reported on a fairly large number of different psychotic states.

One of the most encouraging reports was made by Strecker, Grant and Palmer<sup>4</sup> in 5 cases of chronic schizophrenia, not one of which had been benefited by years of previous therapies. The authors noted removal of emotional charge and definite change in behavior in all patients.

Schrader<sup>6</sup> reported 58 cases in a state hospital, mostly of chronic schizophrenia. He obtained good results in 30, in 26 of which paroles from the institution were granted. The best results were obtained in the paranoid patients.

Freeman and Watts<sup>2</sup> operated on 12 patients with schizophrenia and obtained good results in 5, improvement in 5 others and no response in the other 2. Of this group 3 became regularly employed, 3 were employed part time, 3 were able to live at home and 1 remained institutionalized.

Peterson and Buchstein<sup>7</sup> recently reported 25 cases of schizophrenia of long duration in state hospitals, remarkable improvement occurred in 12 of these, slight improvement in 11, no improvement in 1, and there was 1 fatality.

Ziegler<sup>8</sup> has compiled from questionnaires a survey of all available cases. His analysis is given in the accompanying table.

Although good results from this operation have been reported in the psychoneuroses and affective disorders, we feel that this radical treatment is not indicated at present in these functional emotional states with the possible exception of chronic disabling obsessive

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From the Department of Neuropsychiatric Research, Bishop Clarkson Memorial Hospital.

1. Egas Moniz. Tentatives opératoires dans le traitement de certains psychoses. Paris: Masson & Co, 1936.

2. Freeman, Walter, and Watts, J. W. Prefrontal Lobotomy in Agitated Depression. Report of Case. M. Ann. District of Columbia 5: 326 (Nov.) 1936. Prefrontal Lobotomy in the Treatment of Mental Disorders. South. M. J. 30: 23 (Jan.) 1937.

3. Tarumianz, M. A. in Twenty-Sixth Biennial Report of the State Board of Trustees of the Delaware State Hospital, Wilmington, 1941.

4. Strecker, E. A., Grant, F. C., and Palmer, H. D. Study of Frontal Lobotomy: Evaluation of Neurosurgical and Neurological Features in Five Closely Observed Psychotic Patients. Am. J. Psychiat. 98: 524 (Jan.) 1942.

5. Lyerly, J. C. Transection of the Deep Association Fibers of the Prefrontal Lobes in Certain Mental Disorders. South. Surgeon 8: 4, 6 (Oct.) 1940.

6. Freeman, Walter, and Watts, J. W. Lobotomy. Springfield: Charles C. Thomas Publisher, 1942.

7. Peterson, M. C., and Buchstein, H. S. Prefrontal Lobotomy in Chronic Psychoses. Am. J. Psychiat. 99: 426 (Nov.) 1942.

8. Ziegler, L. H. Personal communication to the author.



compulsive states The present therapy of affective disorders by means of combined psychiatric and convulsive shock therapy is effective Psychoneurotic states usually respond favorably to psychotherapy Lobotomy is a radical procedure that can hardly be considered a cure Definite change in personality does occur after lobotomy The patient becomes more extravertive, less self conscious and no longer aggressive and responsive to abnormal emotional drives, thus becoming a socially acceptable individual But he cannot be said to be cured of the psychosis We should therefore reserve the operation for chronic and apparently permanent institutional patients in whom any improvement is pure gain and the procedure even with its hazards, seems justifiable We have therefore considered its possible application only to improving personality reactions of chronic schizophrenic patients for whom all previous therapies have failed

The mortality of various groups reported to date has been from 1 to 10 per cent Operative hemorrhage has been the usual cause of death Increased experience has lowered the rate, which need never be high

Survey of Bilateral Prefrontal Lobotomies  
Reported from Seventeen Different Clinics in United States  
and Canada on Patients with a Variety of Psychiatric  
Reaction Types, Schizophrenia Predominating

January-March 1943	
1 Number operated on	582
2 Died as a result of the operation	11
3 Died subsequently to the operation	16*
4 Rendered clinically worse after the operation than before	8
5 Clinically unimproved after the operation	60
6 Clinically slightly improved after the operation	111
7 Clinically much improved after the operation	192
8 Recovered after operation, psychotic or neurotic symptoms disappeared	184
9 Number of patients known to be in the hospital now (some able to work)	265
10 Number known to be outside the hospital but unable to work	55
11 Number known to be outside the hospital, working part or full time	235

\* One from suicide  
Survey made by Lloyd H Ziegler M D, medical director Milwaukee Sanitarium, Wauwatosa, Wis

cations have been frequent, such as persistent incontinence, convulsive states (10 per cent), aphasia and postoperative hemiplegias

The modus operandi of the procedure is still not adequately understood Beneficial results possibly occur from section of the anterior thalamic radiation from the medial dorsal nucleus of the thalamus to the frontal poles These fibers may supply affective tone to intellectual experience, and their severance may break the link between emotion and imagination

After lobotomy a pronounced change in the patient's personality occurs Freed of anxiety and obsessive thinking and released from feelings of inferiority, he feels un-self conscious and is able to turn his interests outward He responds quickly to external impressions, is usually euphoric, gets along superficially with everybody and is childlike and cheerful Intellectually the patient retains all past memories but cannot project himself into the future He loses ambition and is satisfied with day to day living The lobotomized individual is friendly, good natured and indifferent to others' opinions, yet expresses himself freely Malice and aggressiveness are lacking He responds well to frustration, although easily angered, he calms down readily Delusions and hallucinations may persist, but he does not spontaneously bring them out or react to them

He makes decisions quickly and enjoys simple pleasures He ignores criticism of others, harbors no grudges and has no worries

THE TECHNIC OF PREFRONTAL LOBOTOMY

In the original operation Egas Moniz<sup>9</sup> injected small amounts of alcohol into the white matter of the prefrontal region through a trephine located 3 cm in front of a vertical line between the ears and 3 cm on each side of the midline of the skull He used a special instrument, called the leucotome, which cut a localized core of white matter in different regions of the prefrontal lobes This technic left a considerable amount of completely devascularized white brain tissue to undergo degeneration and gliosis

Freeman and Watts,<sup>10</sup> who introduced the Egas Moniz technic into this country in 1938, later changed the technic to a simple dull blade incision (Killian periosteal elevator) through a lateral trephine 6 cm above the zygoma and 3 cm behind the anterior rim of the orbit (fig 1) This technic and approach were designed to avoid much devascularization of tissue and postoperative complications of serious hemorrhage, paralysis and convulsions (fig 2) Freeman emphasized passing the blade of the knife in the plane of the coronal suture, not in a vertical line, to avoid complications and to include the precise amount of prefrontal lobe

However, this method of entrance seemed dangerously close to the motor cortex of the face, particularly to Broca's motor speech center on the left side Careful anatomic study of Lyster's<sup>10</sup> approach showed its place of entrance, 4 cm lateral from the midline, to be well located in order to avoid a fissure and cerebral vein commonly located at the 3 cm distance This entrance into the frontal lobe is approximately 3 cm anterior to the arm motor cortex, so that superficial adhesions or gliosis should be less likely to produce postoperative convulsions

The place of the brain incision, determined by insertion of a ventricular needle before the knife blade is entered, passes just in front of the anterior horn of the lateral ventricle This prevents the blade from entering the ventricle or injuring the caudate nucleus or anterior perforated space The depth of safe insertion depends somewhat on the shape of the frontal lobe, but 5.5 to 6 cm, the depth used, will not reach the floor of the frontal fossa in an adult A small incision is made over a convolution in the arachnoid The dull blade is inserted and passed medially and laterally to near the limits of the frontal lobe Resistance of white brain tissue is not great, whereas greater resistance of pia-arachnoid and larger superficial cerebral vessels can be detected before they are torn From each lateral limit of this incision the blade is drawn upward as it is more angulated out The complete incision by this technic is illustrated in figure 2, drawn from lobes cut off in the plane of the lobotomy incision Bleeding from the incision is not great and soon stops after the knife is turned crosswise a few times in different regions to permit escape of blood The scalp wound is then closed with fine silk

The most important white fibers cut by prefrontal lobotomy comprise the frontothalamic radiation which enters the dorsal medial thalamic nucleus Some degeneration of this nucleus occurs after the section,

9 Egas Moniz Les premieres tentatives operatoires dans le traitement de certaines psychoses Encephale 31 1 (June) 1936  
10 Lyster, J G Prefrontal Lobotomy in Involutional Melancholia J Florida M A 25 225 (Nov) 1938

but there is not much degeneration of the cerebral cortex, and it is doubtful whether section of shorter association fibers in the prefrontal lobe is a factor in mental changes following lobotomy. Considerable substitution of function must be possible.

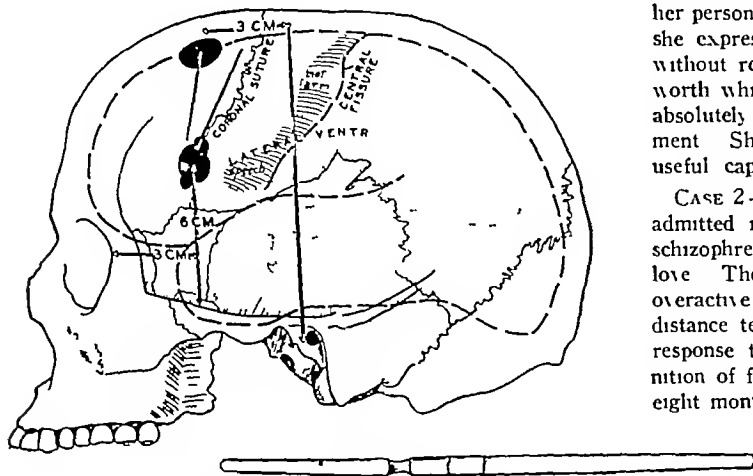


Fig. 1—Lateral aspect of skull, showing coordinates for making burr holes (Modified from Freeman and Watts<sup>4</sup>)

The risks of the operation are not great if the procedure is done properly. The simple insertion of the blade through a small cortical incision well in front of the motor cortex and the transverse section of white brain tissue should cause little hemorrhage or scar formation. Serious complications of hemorrhage or later convulsions cited in the literature are probably related to early faulty technics.

#### REPORT OF CASES

The following 5 cases of chronic schizophrenia illustrate the type of patient and the kind of personality change observed after the operation.

**CASE 1—History.**—B. McC., a woman aged 52, single, a school teacher, admitted in October 1941 after an illness of nine years, had schizophrenia of the paranoid type.

The patient was first taken ill while teaching. The superintendent of schools noted her peculiar actions in the classroom and among teachers. She felt that people had dual personalities which changed from minute to minute (Jekyll-Hyde). She began to have ideas that the board of education was trying to take away her job. The patient's brother and sister said she was worrying over \$1,500 owed her by the board of education.

The patient accused people of stealing her clothing before her eyes and trying to blind her by putting poisonous substances into her eyes. After she was brought to her mother's home she continued to hold the same ideas. Three months later, while cutting dandelions with a knife, she dashed knife in hand, into the street after her nephew. The patient later said she was afraid he might be run over. However, neighbors called the authorities, who took her to a state hospital. She remained there for six years except for a parole of five months in 1935 without improvement. She was aggressive, uncooperative and extremely paranoid, frequently she was so disturbed that she had to be secluded or given sedatives.

On admission to Clarkson Hospital in October 1941 she was restless and resentful of hospitalization. She was extremely hostile and suspicious, cursed the personnel and talked incessantly, verbalizing numerous paranoid ideas. She was unable to talk sensibly, lacked insight and judgment, and wrongly accused patients in the state hospital of deliberately mistreating her. No benefit was obtained from twelve curare electric shock treatments. In November 1941 a lobotomy was performed.

**Postoperative Course.**—The patient was untidy at first. Her belligerent and spiteful remarks changed to sarcastic and witty ones. She was discharged fifteen days after lobotomy in a manageable condition.

**Present Status.**—She lives at home with her sister and has done some part time teaching. She is pleasant, is careful of her personal appearance and loves to go to movies. Occasionally she expresses previous ideas about the duality of people, but without reaction. Relatives feel that results in this case were worth while. Fortunately she has good supervision. She has absolutely no insight but is able to make a good social adjustment. She has been spared institutional life and is a fairly useful capable person.

**CASE 2.**—S. K., a woman aged 25, single, unemployed, admitted in March 1942 after an illness of four years, had schizophrenia of the hebephrenic type after a disappointment in love. The patient at first did not sleep well, then became overactive and sang and talked constantly, engaging in long distance telephone conversations without regard to cost. Her response then changed to silence and stupor without recognition of family. She attempted suicide and soricide. After eight months in a hospital, the last six in a state hospital, she was discharged as cured, following a course of forty-five insulin shock treatments.

On return home the patient, apparently normal, soon became obstreperous, fought for things and even attacked her brother physically.

She was returned to the state hospital, where more insulin shock treatments and a course of metrazol treatments were ineffective. She was overactive, aggressive, profane and obscene. She was transferred to Clarkson Hospital, where she was given twelve insulin shocks and four curare-electric shock treatments without improvement.

On admission to Clarkson Hospital the patient was quiet. Her speech was rapid without expression even when she announced that she had just drunk poison. She showed no fear, anxiety or bewilderment but rather tried to confound the examiner. She used clothing and bedding decoratively but was not destructive. Her speech was spontaneous and unrestrained, with attempts at rhyming, her talk overproductive and jumbled, thus "Poey-poey on luey. Why don't you go to hell? I can't eat no meat. I don't want your ankles. I said that was Tuxedo Junction—I'm a woman and a half. My home is in Sing Sing—I'm Paul Mark, disgusting, poey poey on luey. I've got to look out for bedbugs. This is Clarkson Hospital. I wasn't born in this world. I came and bought it in the dime store. Nothing 10 cents. Six. I came

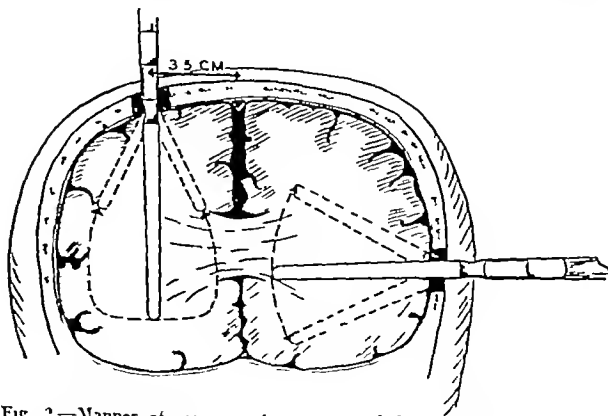


Fig. 2—Manner of incising white matter of frontal lobe (Modified from Freeman and Watts<sup>4</sup>)

here at 9 this morning. From Whiting, Indiana, turn off the machinery. Did you swallow your anacin? You'll kill me, strychnine poisoning. I don't want anything to drink, no thanks. I don't want water (drinking it all without urging). It's poison. Do you have cherry too? Sour. My stomach. I'm a doctor. Poey. God damn your humerus. I

own the business now Why don't you try cherry? I hate bananas I love observations I thought Mr Moore was the guy My kidneys Dry up and blow away Now my heart needs medicine"

A lobotomy was performed in April 1942 In the post-operative course at first the patient was untidy and excreta careless Later she took part in some ward activities, did neat embroidery and began to use makeup and pay attention to her appearance She associated well with other patients and played cards Her answers to questions were pleasant and sometimes jocular

At present she lives at home, doing housework and some embroidery About once a week she has outbursts of profanity and sauciness, never in public Out of a clear sky she will give you her blessing, then say she didn't say anything and start to strike a person, catching herself just in time She is cheerful most of the time, during her menses she becomes seclusive but has clear conversation She inclines to oppose suggestions, is very egotistic and loves to dress up She loves movies and social activities, in which she is friendly and reserved She wants to get married She has gained almost 100 pounds (45 Kg)

She does not remember her illness, being in a state hospital or the operation She omits the last two years, always insisting that she is two years younger than her actual age She can keep house and help her sister, doubtless indefinitely under intelligent, understanding supervision

CASE 3—R K, a married woman aged 33, a housewife, admitted in August 1942 after an illness of two years seven months, had schizophrenia of the paranoid type The husband first noticed that she had periods of silence and sadness, especially late in the day The night before a gallbladder operation and removal of her hymen, to which she consented, she cried bitterly and claimed her husband was talking about her and making fun of her Postoperatively she was confused and suspicious for three or four days but recovered from this attitude About one month later her paranoid ideas were apparent, with olfactory hallucinations

The patient was hospitalized during the early part of 1941 in two psychiatric sanatoriums At the second she received twenty-eight electric shock treatments with temporary improvement followed by relapse Three more shock treatments held her for the rest of the year Early in 1942 she was given fifty-eight shocks, with improvement for only a short time Hospitalization of three weeks brought improvement and then relapse

On admission to the Clarkson Hospital the patient was kept in seclusion almost continuously She exhibited paranoid tirades when questioned but was quiet and cooperative when undisturbed A lobotomy was performed in August 1942

During the postoperative course the paranoid response was lost, the affect blunted She was pleasant and cooperative, repetitively leafing pages, folding paper or writing letters such as "Just a line to let you know that I'm getting along fine, that I'm getting along fine, that I'm getting along fine" Later on this repetition was broken

At present the patient manages her home She is pleasant and friendly and makes an effort to take her mind off worries She has occasional periods of being jittery and seems to get depressed with physical illness She has gained weight and can relax completely The husband is completely satisfied with the result Undoubtedly the operation prevented permanent institutional existence

CASE 4—W B, a single man aged 22, a college student, admitted in December 1942 after an illness of five years two months, had schizophrenia of the hebephrenic type with catatonic features His father committed suicide after financial reverses, a paternal uncle was said to be peculiar but harmless The patient was first taken ill at college He had always been introverted, sensitive, conscientious and studious without previous nervous disorder except a tendency toward extreme day dreaming in childhood He had worked hard in high school and had graduated at the top of his class The first year in college he worked hard but made a poor social adjustment When teased by his college mates for his studiousness, he com-

plained that they turned on the radio or made too much noise whenever he wanted to study He made no heterosexual adjustment In spite of this unhappiness he insisted on returning the next year, his mother thought, to prove he could get along He was soon missed from the college and was subsequently found wandering dazedly in a nearby town He complained of feeling inadequate, expressed much concern over world problems, and especially wanted to combat communistic influences among students He had many ideas of reference, as that others were condemning him, was much depressed and admitted auditory hallucinations

After hospitalization he improved slightly and, on his mother's insistence, was dismissed Two months later he was given seven metrazol shock treatments as an ambulatory patient He showed some improvement but returned to a private hospital on two occasions, on one of which he was given fourteen insulin shock treatments He improved in behavior and was at home for about nine months, during which he had several violent spells of impulsiveness and lack of control and on one occasion threw his mother downstairs He was then committed and sent to the state hospital

On admission there he showed some evidence of deterioration with usually undeviated mood and blunted affect, although he sometimes broke into angry spells without provocation Preoccupied with world problems and illogical thoughts, he had no systematized delusions, although the family related such ideas as that there were secret wires in the house and that he was being controlled He was manneristic, quiet and seclusive with much lack of judgment He laughed unmotivatedly and whispered responses to auditory hallucinations Electric shock and insulin shock treatments were started about six months later He made no gain A half year later he became excited, restless, self injurious, noisy, aggressive, impulsive, violent, uncooperative and destructive, requiring constant restraint

After admission to Clarkson Hospital he was secluded, uncooperative, negativistic, impulsive, stereotyped in speech and expression, without affective response He was definitely blocked and often irrelevant

A lobotomy was performed in January 1943 The postoperative course found him cooperative and partially stuporous but with pleasant response and gratitude for his care He was incontinent Aseptic meningitis developed as a complication, he fell into a deeper stupor but was entirely cooperative when he could be roused After recovery from this complication he remained completely cooperative and became a friendly, carefree person He gained 50 pounds (23 Kg) His letters still reveal schizophrenic dissociation, but he is capable of useful work under supervision Because he has no home he is under psychiatric care until intelligent supervision can be arranged outside an institution

CASE 5—R S, a married woman aged 50, a housewife, admitted in November 1942 after an illness of four years, had schizophrenia of the catatonic type In personality the patient was extroverted, socially active and a good mixer When she was 45 years old she lost a baby at birth She had never had any previous nervous or mental disorder No family history of nervous or mental illness was obtained The mother of the patient died when the patient was a small child

She was taken ill while visiting away from home She suffered short periods of amnesia and once was lost for a day in a large city On return home she had fears of dirt accompanied by feelings of guilt and obsessive hand washing Six months after the onset she became quiet to the point of muteness, refused to eat and was actively negativistic She was hospitalized for three and one-half years, during which she had two full courses of insulin shock treatment, one course of metrazol shock treatment and fourteen electric shock treatments She improved somewhat with each series of treatments but immediately relapsed to her previous catatonic state

After admission to Clarkson Hospital in November 1942 she was given hypnotic doses of a short acting barbiturate and for short periods she was cooperative She revealed a deep seated guilt reaction to an extramarital affair She was given a few curare-electric shock treatments without sustained improvement

A lobotomy was done in January 1943. This operation was incomplete on the left side because of technical difficulties. In April 1943 the left side was operated on again, with a complete incision at this time. Following the first operation the patient became cooperative, ate well and was interested in her surroundings. Incontinence was a major nursing problem. Gradually she became aggressive and sarcastic, then relapsed into inactivity and muteness. Curare-electric shock therapy produced only temporary improvement.

After the second operation an aseptic meningitis developed with recovery in about one week. Her psychologic response was more gradual, with evidence of periodic depression. Investigation showed numerous deep seated feelings of guilt over the extramarital affair, she alternated between depressive moods with feelings of guilt and aggressive, sarcastic behavior. She remains institutionalized and up to date must be considered a failure to obtain improvement from lobotomy.

#### COMMENT

The convalescent postoperative psychiatric nursing care of lobotomized patients is extremely important. The later social management of these changed individuals in a protected environment, education of relatives, and reeducation of the patient are real problems. Little information concerning this phase of treatment is available. Freeman and Watts<sup>11</sup> have recently emphasized its importance.

A phase of apathy and inertia immediately follows operation. Patients appear blank or stuporous for a few days to a week, apparently regressing to an infantile level, and have to be fed and moved about in bed. They pay no attention to excretory functions and appear totally indifferent to their surroundings. Some carry out repetitive acts indefinitely. Gradually the patient becomes more tidy and can be directed into simple activities, but these must be supervised for some weeks.

On the patient's return the family must be given detailed explanations in order to understand the patient. The nurse in charge is instructed to explain in detail the daily routine. The patient must be forced out of bed, taken to the toilet at regular intervals, removed from the toilet, and forced to bathe, dress and feed himself under daily supervision until responsibility develops. As the patient begins to eat, overeating must be controlled. In even the simplest occupational activities the patient must be specifically instructed and guided for a considerable time.

The patient's lack of self consciousness, childlike pleasure in simple things, facetiousness and sarcastic remarks must all be understood by the relatives, who must strictly overlook undesirable behavior. They need to recognize the patient's emotional immaturity for some months after surgery. He must not be permitted to assume such adult responsibilities as looking after money or making unusual social adjustments without supervision for some months. Gradually as he makes better adjustments, more tasks and responsibilities can be added. Return to former employment cannot be expected for at least three to six months after surgery. According to Freeman and Watts the degree of recovery cannot be determined until at least three years have elapsed.

#### SUMMARY

Prefrontal lobotomy, devised by Egas Moniz and perfected by Freeman and Watts has been established as a useful procedure in psychiatric treatment. In our

opinion its usefulness should continue to be investigated and to be limited to chronically disabled psychotic patients who have been unimproved by other therapies. It should not be used in psychoneuroses and affective states until the patients have proved totally refractory to other methods.

In certain selected chronic cases of schizophrenia, in the light of present knowledge, lobotomy should be continued in order to restore many disabled persons to social usefulness. This operation has effected a good social recovery in 4 cases of aggressive paranoid schizophrenia. One catatonic type failed to improve.

The problem of social rehabilitation of these patients opens up a new field of social and psychiatric nursing technics and needs more study to aid lobotomized patients to resume normal living.

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### SALMONELLA CHOLERAЕ SUIS AS A CAUSE OF INDOLENT SUB- CUTANEOUS ABSCESS

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DETROIT

*Salmonella cholerae suis*, which is more commonly known as *Salmonella supestifer* and is normally found associated with a virus in the hog's intestinal tract, was described by Salmon and Smith<sup>1</sup> in 1885. Longcope<sup>2</sup> in 1902 was the first to report human infections caused by this organism. Since that time there have been numerous reports in the literature describing both epidemic and sporadic cases. In 1928 White<sup>3</sup> collected 25 cases of "paratyphoid nature and of localized pyogenesis." Most of the cases which he found had occurred during or after the first world war. In 1937 Harvey,<sup>4</sup> prompted by three outbreaks of food poisoning and the sporadic appearance of the infection in 18 persons, 11 of whom were admitted to the Johns Hopkins Hospital, reviewed the literature and divided 1,425 bacteriologically proved cases into two groups: (a) those found in epidemic outbreaks due to a known source of infection and (b) sporadic cases. He found 50 of the latter recorded in medical literature and reported 21 of his own.

The most common type of sporadic infection is a bacteremia<sup>5</sup> which simulates typhoid. Numerous other manifestations have been reported. Among them are

Edith Hamilton of the department of bacteriology of the City of Detroit Receiving Hospital gave us valuable assistance.

From the Department of Surgery, Wayne University College of Medicine and the Department of Pathology, City of Detroit Receiving Hospital.

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pneumonia,<sup>6</sup> pyarthrosis,<sup>7</sup> osteomyelitis,<sup>8</sup> endocarditis,<sup>9</sup> meningitis,<sup>10</sup> cholecystitis,<sup>11</sup> splenic abscess<sup>11</sup> and infection of the urinary tract.<sup>12</sup> Salpingitis,<sup>13</sup> subdural abscess,<sup>14</sup> infection of myoma of the uterus<sup>15</sup> and acute appendicitis (a fatal case)<sup>16</sup> have also been described. Some of these were associated with bacteremia.

Exceedingly rare are reports of *Salmonella* infection involving the skin and subcutaneous tissues either following septicemia or occurring without antecedent infection of the blood stream. A subcutaneous abscess occurring in a man aged 59 was reported by Kobe<sup>17</sup> in 1930. Steuer<sup>18</sup> in 1937 obtained a pure growth of *S. supestifer* from an abscess on the thigh of a 3 year old child, this abscess followed an empyema from which *S. supestifer* and a pneumococcus were isolated. Todorovitch<sup>19</sup> described an abscess occurring in the thigh of a 32 year old patient following bacteremia. In 1941 Guthrie<sup>20</sup> described a fatal case of periartthritis of the right shoulder of an infant 5 months old. The joint capsule was not involved. Bornstein and his group<sup>21</sup> in a study of 261 human *Salmonella* infections, isolated *S. cholerae suis* from the pus of a psoas abscess and the pus of a periproctal abscess.

Because subcutaneous lesions caused by *S. supestifer* are most rare and because we wish to encourage the collection of additional data on this type of infection, we are reporting a case of indolent subcutaneous abscess due to this organism.

## REPORT OF CASE

T M, a retired Negro laborer aged 73, first seen in the outpatient department of the City of Detroit Receiving Hospital on Oct 12, 1942, complained of a swollen and painful left wrist. He stated that forty years previously, while he was working in a stone quarry in Gainesville, Ga., a piece of rock hit him on the back of the left wrist, severing a tendon. A foreign body was deeply embedded in the wound, the wound healed uneventfully, but a small nodule appeared in the scar. This nodule had swollen intermittently for forty years, but application of liniment had usually caused the swelling to recede.

On Sept 20, 1942, about a month before the patient came to this hospital, a heavy cooking pot fell on his wrist, injuring the old scar. The next day the area was painful and swollen and the swelling subsequently increased. The patient was followed in the outpatient clinic of another hospital for four days. At the end of that time, because of an elevated temperature, he was admitted there. He remained for twelve days. Following is the report from that hospital: "The left hand was markedly swollen, puffy and moderately painful. The left wrist at the radial aspect showed a prominence about 2 cm above the surface of the arm and approximately 2 to 3 cm in diameter. It was indolent and soft moderately painful and fluid to palpation. The entire forearm was somewhat swollen. The patient was seriously ill and had a spiking type of temperature. The hemoglobin content was 12.5 Gm, the red blood cell count, 3,800,000, white blood cell count, 7,100, with polymorphonuclears 80 per cent and lymphocytes 20 per cent. The blood sulfathiazole level was 4.4 mg per hundred cubic centimeters. X-ray examination revealed a foreign body in the left wrist. Continuous hot soaks were applied to the arm, and the patient was given sulfathiazole. His temperature returned to normal the day before dismissal (Oct 7, 1942)." After the patient's discharge from the hospital the arm continued to be swollen, painful and tender and did not improve on supportive measures. The patient was then referred to the outpatient department of the City of Detroit Receiving Hospital, where he was first seen on Oct 27 1942. On October 30 the swollen area was aspirated, and 7 cc of bloody fluid was obtained. This unfortunately was not cultured.

On November 4 the patient was admitted to the hospital for incision and drainage of the swollen area and biopsy. Examination revealed a large, apparently fluctuant mass occupying the entire dorsum of the left wrist. The mass was tender, and motion at the wrist was slightly limited. The other abnormal findings were hypertensive retinopathy, grade 2 enlargement of the heart both to the left and to the right with a diffuse apex beat, a moderately harsh systolic murmur at the apex and a soft blowing one over the aortic area, and definite arteriosclerosis of all vessels. The temperature, the pulse and the respirations were normal. The hemoglobin content was 10 Gm, and the white blood cell count was 6,000 with a differential count of 60 per cent polymorphonuclears, 37 per cent lymphocytes, 2 per cent monocytes and 1 per cent eosinophils. The Kline and Kahn tests were negative and urinalysis showed nothing of note. X-ray examination revealed a foreign body 5 by 7 mm in diameter on the dorsal aspect of the radius approximately 3 inches above the wrist joint. There was considerable disuse demineralization of the bones of the wrist. No evidence of involvement of the bones or of the joint by the infection could be demonstrated (fig 1).

On November 7 under local anesthesia a longitudinal incision about 4 cm long was made through the skin and subcutaneous tissue. Several cubic centimeters of thick greenish purulent material was encountered in the center of the mass. The mass itself consisted of gray-green rubbery tissue which appeared grossly to be tuberculous. A portion of this was removed for microscopic examination, and a pathologic report of pyogenic granuloma and organized hematoma was returned. The material obtained from the abscess was cultured and a motile gram-negative rod isolated. This grew readily on all ordinary mediums. It produced acid and gas on dextrose, maltose, mannite, sorbitol, xylose and rhamnose. There was no reaction on lactose, sucrose, dulcitol, inositol, trehalose and arabinose.

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19 Todorovitch, K. Some Etologie, Epidemiologic and Clinical Facts Concerning Paratyphoid C *Bacillus*. *Kunzendorf, Presse med* 46: 687-689 (April 27) 1938.

20 Guthrie, K J. Suppurative Periartthritis in an Infant, Due to the *Supestifer* Bacillus, *Arch Dis Childhood* 16: 269-274 (Dec) 1941.

21 Bornstein, S, Saphra, I, and Strauss, L. Frequency of Occurrence of *Salmonella* Species, *J Infect Dis* 69: 59-64 (July Aug) 1941.



It grew readily on tartrate agar and was inhibited by citrate. It did not produce indole but did form hydrogen sulfide. On Kligler's medium there were acid and gas in the butt with an alkaline slant. Litmus milk became alkaline, and gelatin was not liquefied. Stool cultures were repeatedly negative for the organism. Routine blood agglutination tests for typhoid antigens H and O and paratyphoid B were also negative on several occasions.

The patient was discharged after three days in the hospital. The identification of the organism was completed by Dr P R Edwards at the Salmonella Typing Station, University of Kentucky, Lexington, Ky., who classified it as *Salmonella cholerae suis* variety Kunzendorf.

The patient was readmitted on November 22. The swelling was still present on the dorsum of the forearm. Purulent material exuded from several small sinuses and the skin surrounding the sinuses was reddened over an area 3 by 5 cm. Beyond this for a distance of approximately 10 cm the skin was dry, hard and scaly. On the volar aspect of the forearm were several areas of reddish discoloration 1.5 cm in maximum diameter (fig 2). The purulent exudate from the lesion was again cultured and the same organism isolated. At this time the white blood cell count was 5,400, with a differential count of 58 per cent polymorphonuclears, 41 per cent lymphocytes and 1 per cent eosinophils; the hemoglobin content was 11 Gm., and the red cell count was 4,280,000.

The patient's own serum agglutinated the organism strongly in dilutions up to 1:30 in a preliminary titration. Further attempts to establish the maximum titer have been precluded because of refusal of the patient to cooperate. He also refused to have the foreign body removed and left the hospital against advice. For the next few months he was seen weekly in our outpatient department. Therapy since discharge has consisted only of immobilization and routine dressings. The wound has continued to suppurate, but gradual improvement has occurred. Several home visits have revealed that the draining sinuses are still present at the site of the original lesion on the dorsal aspect

wood,<sup>22</sup> in reporting a case of osteomyelitis and pyarthrosis due to a hematogenous infection in a 9 month old baby girl, reviewed the literature and concluded that localized *S. supestifer* infection apparently occurs only in infants.

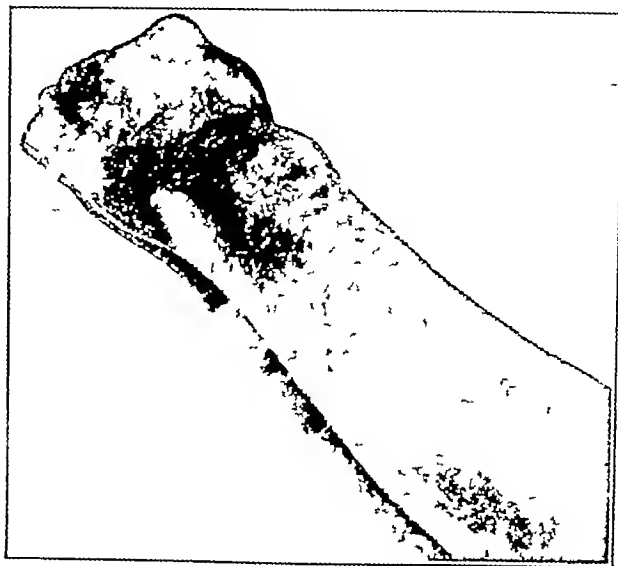


Fig 2—Subcutaneous abscess of left wrist.

As is common in cases of sporadic infection due to this organism, there is no known source of contact in the case just reported. The patient stated that he had not eaten any spoiled or infected meat. Though he had at one time cared for and slaughtered pigs, he had not had contact with them for over twenty years. Gajzago and Götche<sup>8</sup> in 1942 discussed the possible sources of such infection in children, and though they found that in several cases it followed exposure to dead and infected pigs, they came to the conclusion that the main source of infection is probably healthy persons who are carriers.

22 Weaver J B and Sherwood, Loraine. Hematogenous Osteomyelitis and Pyarthrosis Due to *Salmonella Supestifer*. J A M A 105: 1188-1189 (Oct 12) 1935.

**Complications and After-Effects of Diphtheria**—In practically all cases of diphtheria complications occur, the most important of these are secondary infections in the upper respiratory tract. Streptococci are perhaps the most frequent secondary invaders, they are the usual cause of the interstitial and lobular types of pneumonia found so commonly at autopsy as well as of the acute nephritis that sometimes develops. Among the other serious complications may be mentioned obstruction of the air passages and asphyxiation; this results from aspiration of the diphtheritic membrane and also aspiration pneumonia, the development of which is favored by paralysis of the laryngeal muscles. When destruction of the mucosa and submucosa is extensive, as it so often is when the lesions are secondarily infected, healing may be accompanied by scarring followed by contraction of the scar and narrowing of the air passages, laryngeal stenosis produced in this way is one of the common complications of the disease. Infections in the middle ear and mastoid processes are frequent and are due either to the secondary invaders or to the diphtheria bacilli; these organisms pass upward and reach the middle ear by way of the eustachian tube. Otitis media and mastoiditis originating in this way may lead to any or all of the serious temporary and permanent disorders that usually follow infections in the temporal bone.—Forbes, Wiley D. Reaction to Injury. Baltimore, Williams and Wilkins Company, 1943.

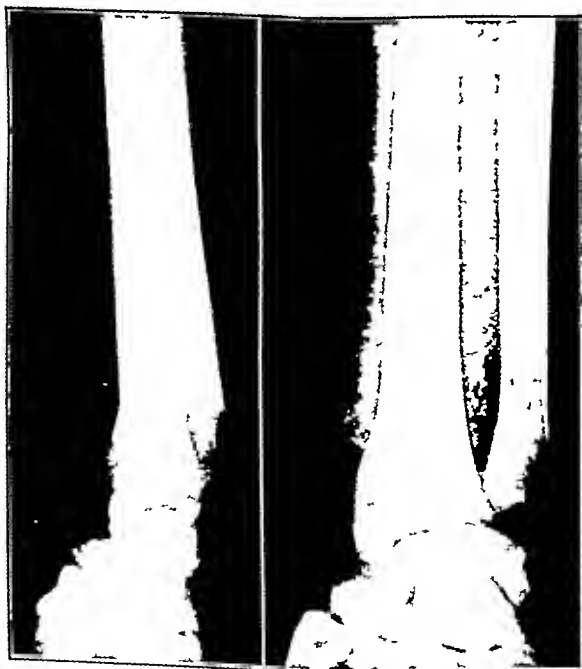


Fig 1—Lateral and anteroposterior views of foreign body in left wrist.

of the wrist and that 5.5 cm above this there is another draining sinus. Motion is not impaired, and the patient wears a bandage only to prevent irritation.

This case is interesting since the patient is 73 years old and the majority of previously reported localized infections have been in children. Weaver and Sher-

# THE INTENSIVE TREATMENT OF GONORRHEA AND SYPHILIS

ORGANIZATION, OBJECTIVES, ACTIVITIES AND  
ACCOMPLISHMENTS OF THE CHICAGO  
INTENSIVE TREATMENT CENTER

## PRELIMINARY REPORT

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MD, JACK RODRIGUEZ, MD,  
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## I ORGANIZATION

The Chicago Intensive Treatment Center is operated under grants received from the Federal Works Agency, the U S Public Health Service the state of Illinois and the Chicago City Council

It was dedicated on Nov 29, 1942 as an added facility in the Venereal Disease Control Program of the Chicago Health Department. The center receives its patients mainly from the health department clinics, selective service and also from private physicians and the various hospitals. Attendance at the center is voluntary.

Extensive new case finding programs have been established in the health department. These have effectively uncovered for the Chicago Intensive Treatment Center many sources of patients infected with venereal disease which were heretofore missed. Among the most important methods used in locating the sources of infection are (1) a thorough search for and complete examination of all known contacts of infected military personnel, (2) routine examinations of such groups as selective service registrants and court cases and (3) complete cooperation of the majority of tavern, hotel and industrial groups in searching out for the health department, suspects of venereal disease.

## II OBJECTIVES

As a wartime emergency activity, the primary objective of the Chicago Intensive Treatment Center is to control effectively, and as quickly and safely as possible the spread of venereal diseases by making non-infective those who spread these diseases. Therefore, persons with the following types of disease are admitted for diagnosis and treatment

### A Syphilis

- 1 Primary and secondary syphilis
- 2 Relapsing primary and secondary syphilis
- 3 Untreated early latent syphilis meeting the following requirements

Dr Aron is consultant in biochemistry and nutrition. Drs Craig, Schwemlein and Jack Rodriguez are assistant surgeons (R) in the United States Public Health Service. Collaborators: Max Biesenthal, MD, consultant in pulmonary diseases, Anne L. Bohning, MD, consultant in cardiovascular diseases. From the Section on Fever Chemotherapy of Syphilis and Gonorrhea (Drs Craig, Schwemlein and Steves and E C Sittler), the Section on Venereal Disease Diagnosis and Chemotherapy of Syphilis (Drs Strakosch and A. A. Rodriguez) and the Section on Gonorrhea (Drs Shaw and Jack Rodriguez).

Age of patients to be 25 years or less, with the exception of those patients between the ages of 25 and 30 who give a two year or less specific history of untreated syphilis

### B Gonorrhea

1 Named promiscuous sources or contacts of persons infected with gonorrhea who have positive evidence of the disease either by laboratory or by clinical findings

2 Promiscuous persons for whom the epidemiologic information justifies isolation

3 Infectious gonorrhea resistant to routine methods of treatment.

4 Those cases discovered by draft boards or selective service field stations during routine medical examinations

5 Patients with severe complications of the genital adnexa, ophthalmia and arthritis, due to gonorrhea

### Undiagnosed Lesions

All patients presenting themselves to the Chicago Health Department clinics with acute undiagnosed genital lesions

## III ADVISORY COMMITTEE

Dr Morris Fishbein suggested the appointment of a scientific advisory committee. This panel includes authoritative leaders in the field of venereal diseases who make decisions concerning policies and procedures to be followed and types of treatment to be employed as well as dosages of the drugs to be used. The advisory group now includes the following physicians: Herman N Bundesen, Paul A O'Leary, Francis Seneary, John S Coulter, Frank Krusen and Norris J Heckel, and the following, who have been especially concerned with development of apparatus for fever treatment: Charles F Kettering, D Sc, and Paul de Kruif, Ph D

## IV ACTIVITIES AND ACCOMPLISHMENTS

A Syphilis—Three methods of intensive treatment for early syphilis are being employed—two comparative and one noncomparative method

The two comparative methods are

1 Modified Simpson, Kendell, Rose<sup>1</sup> (artificial fever in air conditioned cabinet plus arsenobismuth therapy) - hereafter referred to as fever-chemotherapy

All patients who complete fever-chemotherapy are at present routinely given 176 mg of mapharsen per kilogram of body weight (180 mg maximum regardless of weight) in three equally divided doses administered by the multiple syringe method. This is combined with one single dose of elemental bismuth (2 cc bismuth subsalicylate in oil) administered intramuscularly within twenty-four hours prior to the day of fever-chemotherapy.

In addition to mapharsen and bismuth, each patient also receives eight hours of fever maintained at the level<sup>2</sup> of 106 F (rectal) in the hypertherm cabinet.

The first dose of mapharsen is given when the patient's temperature first reaches the desired level of 106 F (rectal), the second dose at the beginning of the third hour, and the third dose at the beginning of the fifth hour of maintained fever.

2 Modified Schoch-Alexander<sup>4</sup> (multiple syringe, short term arsenobismuth therapy), hereafter called intensive chemotherapy

All patients who complete intensive chemotherapy are at present routinely given 80 mg of mapharsen twice

1 Simpson, Walter M, Kendell H Worley, and Rose Donald I. The Treatment of Syphilis with Artificial Fever Combined with Chemotherapy. Supplement 16 to Venereal Disease Information.  
2 As developed at the Kettering Institute for Medical Research, Miami Valley Hospital, Dayton, Ohio.  
3 Allows for 0.2 degree F  $\pm$  variation from the desired level.  
4 Schoch, Arthur G, and Alexander, Lee J. Short Term Intensive Arsenotherapy of Early Syphilis. Am J Syph Gonorr & Ven Dis 27: 607 (Sept) 1941 and Arch Dermat & Syph 46: 128 (July) 1942.

daily for seven days (regardless of weight) by the multiple syringe method. This is combined with 150 mg of elemental bismuth (2 cc of bismuth subsalicylate in oil) administered intramuscularly in one dose every second day for four doses.

The noncomparative method<sup>6</sup> is the modified Eagle-Hogan (multiple syringe long term arsenobismuth therapy), hereafter called long term intensive chemotherapy.

All patients who complete long term intensive chemotherapy are at present routinely given 1 mg of mapharsen per kilogram of body weight, administered by the multiple syringe method three times weekly for eight weeks. This is combined with 75 mg of elemental bismuth (1 cc of bismuth subsalicylate in oil) administered intramuscularly in one dose twice weekly for sixteen doses.

**Method of Assignment for Treatment** When the diagnosis of syphilis is established and the patient agrees to undergo treatment, he is assigned either to the fever-chemotherapy section or the intensive chemotherapy section by the admitting clerk. The distribution of patients is on a two to one ratio, two to the fever-chemotherapy section and one to the intensive chemotherapy section. Because of the greater length of time needed to complete treatment, patients in the intensive chemotherapy section remain in the center twice as long (approximately fourteen days) as those in the fever-chemotherapy section. This is why twice as many patients are assigned to the fever-chemotherapy section. This distribution by the admitting clerk prevents selectivity of patients for the respective forms of intensive treatment. Those patients who, on examination, are found to have contraindications for either of the two comparative methods are then referred for long term intensive chemotherapy.

Regardless of the section to which the patient is admitted, an extensive physical examination by competent physicians, including laboratory survey, is completed before treatment for syphilis is started. This examination includes a complete pulmonary and cardiovascular examination by special consultants who have been selected because of their training. In our experience, intensive treatment is contraindicated in early active tuberculosis and certain forms of cardiovascular disease. The examination also includes x-ray examination of the chest, electrocardiogram, lumbar puncture,<sup>5</sup> blood count, sedimentation time, complete urinalysis, and icterus index. No patient is given intensive treatment until the diagnosis has been conclusively established and the medical consultants have indicated that, in their opinion, there are no contraindications for treatment.

The following observations in connection with the three methods of intensive treatment are offered only as a preliminary report, as the time period over which these studies have been made is insufficient to permit any conclusions as to the ultimate results of the intensive forms of therapy.

**Fever-Chemotherapy** From Nov. 10, 1942 through Oct. 8, 1943, 931 patients were given fever-chemotherapy for syphilis. Of the 931 treated, 2 cases terminated fatally—the 13th and 69th patients treated. Since the

second death (69th patient), 862 have been treated consecutively with no fatality or serious reactions.

The following are the case records in these two fatalities.

**CASE 13**—A woman aged 23, weighing 113 pounds (51 Kg.), with a diagnosis of secondary syphilis (generalized maculopapular eruption), received eight hours of maintained fever at 106 F (rectal) combined with 150 mg of elemental bismuth (2 cc of bismuth subsalicylate in oil), administered intramuscularly within twenty-four hours prior to the day of fever-chemotherapy, and mapharsen 120 mg in divided doses of 40 mg each, administered at the beginning of the first, third and fifth hours of maintained fever. Death occurred on the eleventh post-treatment day. Partial postmortem examination (the head was not examined) revealed miliary tuberculosis of the right lung, liver and spleen, caseous tuberculosis of the lymph nodes (peritracheal), acute yellow atrophy of the liver, pronounced parenchymatous degeneration of the heart, liver and kidneys, and hemorrhagic cystitis.

**CASE 69**—A woman aged 22, weighing 122 pounds (55 Kg.), with a diagnosis of primary syphilis and gonorrheal urethritis and cervicitis, with urethral cultures and smears positive for gonococci and darkfield positive for *Treponema pallidum* from labial lesions, received eight hours of maintained fever at the level of 106 F (rectal), combined with 150 mg of elemental bismuth (2 cc. of bismuth subsalicylate in oil) administered intramuscularly within twenty-four hours prior to the day of fever-chemotherapy, and mapharsen 60 mg in divided doses of 30 mg each, administered at the beginning of the first and third hours. Death occurred on the sixth post-treatment day. No postmortem examination was made. The exact cause of death was undetermined, but it was the clinical impression that the cause of death was tuberculous meningitis.

Following the first death the maximum dose of mapharsen was reduced from 120 to 60 mg for all patients. This reduction in mapharsen dosage was made to determine, if possible, the minimum amount of mapharsen, when combined with fever and bismuth, required to obtain maximum results safely.

Following the second death it was decided to permit only those patients to receive fever-chemotherapy and intensive chemotherapy who were examined by an authority in pulmonary diseases and found to be free from active tuberculosis.

In addition to the change in the mapharsen dosage and in the diagnostic procedures referred to, the following improvements were made.

1 Adjustment of the patient's water and electrolyte balance by controlling the fluid intake. This prevented dehydration or overhydration and depletion of the electrolyte reserve and resulted in a more satisfactory treatment and postfever recovery.

2 Reduction in fever cabinet temperature below that of the patient's temperature. This was accomplished through the introduction of a modulating control which operates on the heating and humidifying devices of the cabinet.

3 Routine calibration of the rectal indicating thermometer by means of a constant temperature bath. This insured the accuracy of the temperature readings.

These changes materially increased the patient's comfort and reduced the incidence of complications.

After 241 patients had received 60 mg of mapharsen, it was necessary to retreat 51 of them for the following reasons. Chancre recurred in 1 (monorecidence) there were mucocutaneous relapses in 38. 2 developed secondary lesions even though treated while in the chancre phase in 2 cases the serologic tests became negative and reverted to positive (serologic relapse). 6 patients were retreated because the serologic tests remained

<sup>5</sup> Those patients rejected from fever-chemotherapy and intensive chemotherapy were candidates for this method.

<sup>6</sup> It is recognized that there is some objection to the performance of lumbar punctures before the institution of antisyphilitic treatment of patients with primary and secondary syphilis. In the intensive treatment employed this has been a routine investigative procedure with all but pregnant patients. In 1,380 spinal fluid specimens examined before treatment of the patient 2% specimens (16.4 per cent) showed positive

positive for at least six months (serologic persistence or progression), and 2 patients because they were thought to have reinfections

The maximum dose was then gradually raised until at the present time patients receive 176 mg of mapharsen per kilogram of body weight, maximum 180 mg. With this amount of mapharsen given to 488 patients to date, it was necessary to retreat 11 patients for the following reasons: Two progressed from chance to secondary lesions, 3 had mucocutaneous relapses, in

TABLE 1—Syphilis Patients Given Fever-Chemotherapy, Classified by Diagnosis and Last Reported Status, Nov 10 1942 Through Oct 8, 1943

Last Reported Serologic or Clinical Status After Treatment	Diagnosis on Admission					
	Total	Primary		Secondary		
		Sero negative	Sero positive	Previously treated	Relapsing	Latent
Serologic titer status negative	222	32	63	105	8	9
Under observation declining	242		31	131	10	61
Rising						
Significant	37	1	3	18	1	14
Insignificant	35	1	0	17	1	10
Lag effect	15		0	5		4
Stabilized	150	1	14	85	7	43
Fallures						
Serologic Relapse	3			3		
Progression	9		1	6	1	1
Clinical						
Relapse	45		4	37	4	
Progression	10		5	8	3	
Total	774	35	138	410*	44	142

\* Including 9 patients with 1 to 4 previous arsenical injections and 1 patient with 12 arsenical and 2 bismuth injections

The serologic titer status is analyzed according to the results of serial after treatment quantitative Kahn tests

Negative Darkfield positive seronegative primary syphilis remaining seronegative after treatment, seropositive syphilis reversed to seronegative after treatment

Declining titer Seropositive syphilis with progressive decrease in Kahn quantitative units after treatment

Rising titer Syphilis with progressive increase in Kahn quantitative units after treatment, divided into three groups: Significant Any rising titer above 4 units; Insignificant Any rising titer 4 units and below; Treatment lag effect Rising titer immediately after treatment

Stabilized titer Syphilis with no change in the Kahn quantitative units on the last two or more successive tests after treatment

Serologic relapse Serums which were initially positive reversed to negative and subsequently became positive

Serologic progression Positive serums which have not become seronegative and have been retreated after a six months observation period

TABLE 2—Reasons for Removal of 65 Patients from Cabinet

Lack of cooperation	27
Persistent mental confusion	21
Cardiovascular fatigue	0
Persistent nausea and vomiting associated with abdominal cramps	3
Extreme generalized body fatigue	4
Mechanical cabinet difficulties	2
Convulsion	2

1 case the secondary lesions involuted but recurred shortly, the serologic tests which had reverted to negative again became positive in 1 case (serologic relapse), the serologic tests remained positive for at least six months in 1 case (serologic progression) and there were 3 patients who had possible reinfections

It has been the policy to give those patients who, following one session of fever-chemotherapy, failed to obtain satisfactory clinical and serologic results a course of intensive chemotherapy. Those patients classified as possible reinfections when again admitted for treatment are redistributed as new patients

Eight hundred and sixty-six of the 931 patients completed fever-chemotherapy. Ninety-two of the 866 patients treated are not included in table 1 for the

following reasons: Eighty were too recently treated or failed to report for examination, 5 had possible reinfections, 4 had asymptomatic neurosyphilis, 2 died, and 1 patient was proved nonsyphilitic. The status of the remaining 774 patients, grouped by diagnosis, is presented in table 1

Sixty-five of the 931 patients did not receive a complete fever-chemotherapy treatment and were removed from the cabinet for the reasons given in table 2. Twenty-one of the 65 received between seven and eight hours of maintained fever combined with the prescribed dose of mapharsen, the remaining 44 received less than seven hours of maintained fever and varying amounts of mapharsen. All patients were either immediately treated with intensive chemotherapy or placed under observation, dependent on their clinical status of infectiousness

Patients are dismissed the morning of the third day after fever-chemotherapy if there are no active lesions of the skin or mucous membranes and if other venereal diseases, when present, have been satisfactorily treated. Patients are instructed to return one week after dismissal from the center for clinical and serologic reexamination, thereafter, at weekly intervals until all lesions have completely healed. When such criteria have been satisfied, the patients are requested to return every two weeks until two consecutive negative serologic tests have been obtained, and thereafter at monthly intervals. Patients are instructed to report immediately, however, if clinical signs or symptoms are noted. An intensive follow-up secures the return of the large majority of those patients who do not obey these instructions

Intensive Chemotherapy. From Feb 19 1943, through Oct 8, 1943, 390 patients have been given intensive chemotherapy<sup>7</sup> as the second comparative method of treatment for syphilis. This series was instituted to determine whether this method, or one of its modifications, may furnish an intensive arseno-bismuth therapy to be given safely without the necessity for the elaborate equipment and highly trained personnel needed in fever-chemotherapy. Of the 390 cases treated, none terminated fatally

From Feb 19, 1943 to June 30 1943 a total of 172 patients were treated with 60 mg of mapharsen twice daily, in the morning and in the afternoon, by the syringe method, over a period of ten days

Of the 172 patients treated nitritoid crises were encountered in 3 patients. Milian's syndrome,<sup>8</sup> or ninth day erythema, was seen in 22 of the patients treated. All of the Milian's syndrome reactions were severe enough to necessitate the discontinuance of treatment. This syndrome did not occur before the seventh day. To reduce to a minimum the necessity of giving mapharsen during the presence of this syndrome, the following modification was adopted on June 21, 1943

Seventy-five mg of mapharsen twice daily, morning and afternoon, for seven days, combined with 75 mg of elemental bismuth (1 cc of bismuth subsalicylate in oil) every second day for four doses, after which the patient was discharged to the outpatient department where 150 mg of elemental bismuth (2 cc of bismuth subsalicylate in oil) was given every fifth day for six doses

7 It was decided not to use the "five day continuous intravenous drip method" as it is being evaluated at numerous centers all over the country

8 Elevation of temperature swelling of eyelids conjunctivitis lymphoid hyperplasia malaise sore throat polymorphic erythematous eruption

From July 1 1943 to Sept 25 1943 a total of 208 patients were treated by this modified method. Of the 208 patients treated nitritoid crises were encountered in 2. Milian's syndrome or ninth day erythema, was seen in 18 of the patients treated. Two patients developed encephalitis 1 in the evening of the seventh day of treatment, remaining unconscious for twenty-four hours and recovering without sequelae, the other in the evening of the sixth treatment day, remaining unconscious for twenty days and, at the present writing, recovering.

Ulcerative bismuth stomatitis was observed in 24 patients. This complication was evident to such a degree that discontinuance of treatment was necessary.

Two hundred and sixty-three of the 390 patients completed intensive chemotherapy. Sixty-three of the 263 patients treated are not included in table 3 for the following reasons: 53 were too recently treated or failed to report for reexamination; 6 had asymptomatic neurosyphilis, and 4 were treated for serologic relapse.

The status of the remaining 200 patients, grouped by diagnosis, is presented in table 3.

From March 1, 1943 through Oct 8 1943 all patients received 1 mg of mapharsen per kilogram of body weight, administered by the multiple syringe method three times weekly for eight weeks, combined with 75 mg of elemental bismuth (1 cc of bismuth subsalicylate in oil), administered intramuscularly in one dose twice weekly for sixteen weeks.

Milian's syndrome was encountered in 2 cases. In these the treatment was temporarily discontinued for from five to eleven days, after which time it was resumed without any further complications. One female patient developed agranulocytosis and pneumonia after the eighth injection of mapharsen, and another female patient developed generalized eczematoid dermatitis two days after her twenty-fourth arsenic injection. Both recovered without sequelae. Bismuth stomatitis was noted in 3 patients.

Ninety-eight of the 181 patients completed the long term intensive therapy. Seventeen of the 98 patients treated are not included in table 5 for the following reasons: 12 failed to report for examination, 1 had asymptomatic neurosyphilis, 1 had tertiary syphilis.

TABLE 3—*Syphilis Patients Given Intensive Chemotherapy\* Classified by Diagnosis and Last Reported Status, Feb 19, 1943 Through Oct 8, 1943*

Last Reported Serologic † or Clinical Status After Treatment	Diagnosis on Admission												
	Primary												
	Total		Seronegative		Seropositive		Secondary				Latent		
	Number	10 Day	7 Day	10 Day	7 Day	10 Day	7 <sup>a</sup> Day	10 <sup>b</sup> Day	7 <sup>c</sup> Day	10 Day	7 Day	10 Day	7 Day
Serologic titer status negative	63	45	18										
Under observation declining	60	32	28	3	2	10	7	22	7	0	1	1	1
Rising						4	1	10	15	8	0	4	6
Significant	15	11	4			1							
Insignificant	11	9	2			3		4	1	3		3	3
Stabilized	41	27	14			2		3		1	1	2	1
Failures (clinical)								11	8	3	2	11	4
Relapse	8	8						2		6			
Progression	2	2				2							
Total	200	134	68	3	2	22	8	58	31	30	10	21	15

\* Classified into two groups: 10 day patients who received 1,200 mg of mapharsen in 10 days and 7 day patients who received 1,050 mg of mapharsen plus 300 mg of elemental bismuth in 7 days and in addition 600 mg of elemental bismuth within one month in outpatient department.

† See classification for table 1. (\*) including 1 reinfection. (b) including 3 patients with previous treatment and 1 reinfection. (c) including 6 patients with previous treatment and 1 reinfection.

Of the 173 patients who received 1,200 mg of mapharsen within ten days, it was necessary to retreat 10 for the following reasons: 8 patients developed mucocutaneous relapses and 2 developed secondary lesions even though treated while in the chancre phase. It has been the policy to give those patients classified as failures following one course of intensive chemotherapy one session of fever-chemotherapy.

Intensive chemotherapy patients are dismissed from the center after receiving the total dose of mapharsen if there are no active lesions of skin or mucous membranes and if other venereal diseases, when present, have been satisfactorily treated. Follow-up procedures on dismissal, when all treatment has been completed, are the same as were described under fever-chemotherapy.

**Long Term Intensive Chemotherapy.** This method has been employed as the noncomparative method of intensive treatment.

From Oct 31, 1942 through Oct 8, 1943, 181 patients were given long term intensive chemotherapy for syphilis. Of the 181 cases treated, none terminated fatally. From Oct 31 1942 to March 1, 1943 a total of 68 patients were treated with mapharsen three times weekly for ten weeks according to table 4

(biopsy reported as gumma of skin), 2 were treated for serologic relapse, and 1 had congenital syphilis.

Patients are dismissed to the outpatient department when there are no active skin or mucous membrane lesions and if other venereal diseases, when present, have been satisfactorily treated. On the average patients receive two weeks of treatment in the center.

TABLE 4—*Table of Treatment*

Weight (Kilograms)	Dose (Milligram*)
Less than 40	40
40-50	50
50-60	60
60-70	70
Over 70	80

and six weeks in the outpatient department. Follow-up examinations on dismissal, when all treatment has been completed, are the same as described under fever-chemotherapy.

**B Gonorrhea.**—Two approved methods of treatment for gonorrhea are in operation at the center.

**1 Sulfonamide.** Female patients routinely receive 1 Gm of sulfathiazole every four hours four doses daily over a five day period for a total of 20 Gm.



Male patients receive 1 Gm of sulfathiazole every four hours, night and day, over a period of three days for a total of 18 Gm

2 Artificial Fever Combined with Sulfonamides Those patients classified as "sulfonamide resistant" are given artificial fever combined with sulfonamides. Male and female gonorrhea patients are classified as "sulfonamide resistant" if there are present positive cultures for gonococci after two routine courses of sulfonamide therapy. Patients are accepted for treatment following an extensive physical examination, including complete laboratory survey. The physical status must meet the same requirements as those employed in fever-chemotherapy for syphilis. This treatment consists of eight hours' maintained fever at 106 F (rectal) combined with 7 Gm of the sulfonamide given over an eighteen hour period prior to the beginning of the fever treatment.

A total of 1,786 patients were admitted to the center for the treatment of gonorrhea from Nov 10, 1942 through Oct 8, 1943. Of these 1,786 patients, 1,249

that this will produce on the incidence of early syphilis in the Chicago area will be determined.

3 Patients remain in the center until active lesions of the skin and mucous membrane have been healed. The average stay is seven days in the fever-chemotherapy section and fourteen days in the intensive chemotherapy section.

4 An advisory board was appointed to determine the routines of treatment and dosages used in intensive treatments.

5 For elimination of needless complications or fatalities, specialists made physical examinations and laboratory study of each candidate for intensive treatment.

6 Following the first death, and in the interest of safety, the dose of mapharsen was reduced in fever-chemotherapy from 120 to 60 mg in a series of 241 consecutive cases. This reduction in mapharsen was used to determine, if possible, the minimum amount of the drug needed to render patients noninfectious. The number of failures in this series has been 21 per cent (8 serologic and 41 clinical relapses).

7 In the present series of 488 patients the dose of mapharsen has been raised to 176 mg per kilogram of body weight in fever-chemotherapy. The number of failures in this series has been 16 per cent (2 serologic and 6 clinical relapses). The time interval of observation in this last series is less than for the previous group. However, at present there are no indications of an increase in the number of relapses.

8 Three hundred and ninety patients were treated with intensive chemotherapy, 172 receiving 1,200 mg of mapharsen within ten days. This group was observed for seven months, 58 per cent failures were noted (10 mucocutaneous relapses). The method was discontinued since reactions severe enough to stop treatment were encountered in 119 per cent of the cases treated. A modification was then adopted whereby all the mapharsen was given within seven days, in addition to which bismuth was added. Two hundred and eight patients were treated with this regimen. The observation period of this group is too short to allow any conclusion.

9 The long term intensive chemotherapy was not used as a comparative procedure, only those patients rejected for fever-chemotherapy and intensive chemotherapy were treated. Therefore, no conclusions concerning its efficiency are made. However, of the 81 patients treated with this system, 52 have thus far become serologically negative and 1 patient developed serologic relapse. There have been no clinical relapses to date.

10 A total of 1,786 patients were admitted to the center for treatment of gonorrhea from Nov 10, 1942, through Oct 8, 1943. A detailed report of the results and the technic employed will be published when statistics are available.

11 It is repeated with emphasis that this is a preliminary report of patients treated prior to Oct 8, 1943 and under observation for periods varying from one to twelve months. The report is offered primarily to indicate the safeguards necessary in establishing the value of the intensive method of treatment of the venereal diseases here described. Continued observation of this group for a long period is necessary before deductions can be attempted as to the actual value of the systems of treatment being employed.

TABLE 5—Syphilis Patients Given Long Term Intensive Chemotherapy, Classified by Diagnosis and Last Reported Status, Oct 31, 1942 Through Oct 8, 1943

Last Reported Serologic* or Clinical Status After Treatment	Diagnosis on Admission					
	Total	Primary		Secondary		Latent
		Sero neg. tit.ve	Sero pos. tit.ve	Un treated	Relaps ing	
Serologic titer status neg						
active	52	4	12	31*	2	3
Under observation declining	9		1	6		2
Rising						
Significant	3					
Insignificant	4		1	2	1	
Stabilized	12		2	6 <sup>b</sup>		5
Failure						
Serologic relapse	1			1		
Total	81	4	16	48	3	10

\* See classification for table 1. (a) Including 1 patient with previous treatment, (b) including 1 possible reinfection.

were females and 537 males. Of the 1,786 patients, 106 were given artificial fever therapy combined with the sulfonamides.

Female gonorrhea patients are discharged from the center after treatment subsequent to four consecutive daily negative cultures for gonococci. Male gonorrhea patients are discharged after one negative culture if all suggestive clinical findings have disappeared.

Male and female patients discharged from the center are followed in the outpatient clinic for a period of three months.

A detailed report of the results and the technic employed will be published at a later date when statistics are available.

#### SUMMARY

1 The extensive case finding and case holding program causes a large number of patients with infectious venereal diseases to hospitalize themselves voluntarily. With few exceptions, each of these patients completes the prescribed course of treatment in the center.

2 Large numbers of spreaders of venereal disease have been removed from circulation and admitted to the center by mass case finding and case holding procedures. The rapid suppression of infectious lesions by intensive treatment interrupts the chain of contact. The effect

CUTANEOUS REACTIONS DUE TO THE  
BODY LOUSE (PEDICULUS  
HUMANUS)

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While infestation with the body louse (*Pediculus humanus*) is not infrequent in our civilian population it does not constitute a serious public health problem. Under wartime conditions however when large numbers of our combat forces may become infested with this parasite there is the possibility of their developing the various diseases for which the lice are vectors. In addition many observers believe that the discomfort from the accompanying pruritus may reduce the efficiency of the infested men.

The timely importance of the problem seemed to warrant additional work on the dermatologic phases of louse infestations. The maintenance of a large colony of lice for use in insecticidal investigations in the Division of Zoology afforded an opportunity for observing cutaneous lesions and for conducting intradermal and other tests on persons who had fed lice over relatively long periods of time.

## REVIEW OF THE LITERATURE

According to most authors, the earliest manifestations of the louse bites are minute red noninflammatory points which are flat with the skin. The lesions quickly become papular and wheal-like. Pruritus is a prominent symptom and secondary eczematization may occur as the result of scratching. In cases of long standing the skin may become thickened, dry and scaly, and eventually a pigmentation may develop.

The effect of the bite and the itching varies in different individuals just as in the bites from other insects. Furthermore, the manifestations are no doubt correlated in part with the degree of infestation.

Sikora<sup>1</sup> after allowing herself to be bitten about four thousand times, came to the conclusion that there was practically no itching from the bite. However, she reported that, when biting, 1 out of every 10 lice produced a sticking sensation like that of a fine needle.

Swellengrebel<sup>2</sup> allowed lice to bite his arm and observed a slight hyperemia lasting an hour at the site of the bite, there being no itching. If, however, he crushed the louse while it was feeding, the spot became reddened, edematous and itchy. Even a slight necrosis of tissue took place. He therefore concluded that it was the crushing of the louse that produced most of the cutaneous manifestations. However, Belding<sup>3</sup> attributed the irritating effects of the bite to the saliva.

Nuttall<sup>4</sup> as well as Jameson<sup>5</sup> and others<sup>6</sup> believed that a febrile condition may develop owing to the skin

irritation or the bite itself. These authors observed the appearance of fever and malaise as well as a generalized eruption after feeding several thousand lice. Nuttall<sup>4</sup> considered an anaphylaxis as a possibility to account for the temperature. He concluded from his experiments that there was present in the salivary glands of the louse a substance which was sufficiently toxic to give rise to a generalized skin eruption and a mild fever.

Not one of the aforementioned authors has apparently considered the possibility of the louse feces playing a role in the pathogenesis of the skin irritation. In fact, Moore and his collaborators<sup>6</sup> concluded from their experiments that the feces were not involved in the inflammatory reactions. However, in the course of our observations of the cutaneous changes following exposure to lice it seemed that the reaction was more intensified when a considerable quantity of feces was present on the skin. This led us to the view not only that the reaction might be due to the injection of an irritant from the saliva but that the feces themselves might play an important role in the inflammatory process. We are, of course cognizant of the fact that the feeding of large numbers of lice on a small area of the skin provides a concentration of louse feces probably not encountered in natural infestations. However, the fact remains that in such infestations feces are deposited directly on the skin of the host and furthermore are being continually sifted from the clothing on to the surface of the body.

## MATERIALS AND METHODS

**Strain of Lice Used**—The original colony consisting of 2 females, several larvae and numerous ova, was obtained on Nov. 30, 1942 from Major Cornelius B. Philip of the Army Medical School. This colony was fed continuously by one of us (W. H. W.) between that date and December 15, the lice being kept on the body at all times during the day and night. On the latter date continuous feeding was discontinued because of the severe reactions, and the lice were fed only for periods varying between four and eight hours daily. Between feedings they were kept in an incubator at a temperature of 86 to 87 F and a relative humidity of 70 per cent. Continuous feeding of the lice for the period of two weeks resulted in such expansion of the colony that it was divided on several occasions and parts given to other persons to feed.

**Method of Breeding**—For rearing and feeding purposes the lice were maintained in accordance with the method of Wolbach, Todd and Palfrey.<sup>7</sup> A portion of the top and bottom was stamped out of ointment tins measuring 2 inches in diameter and  $\frac{3}{8}$  inch in depth, providing an opening 1 inch in diameter. Over these openings was cemented silk bolting cloth having approximately 84 meshes to the square inch. A metal bridge soldered to the top of the ointment tin provided a holdfast apparatus for the leather strap which bound the box to the surface of the skin of the arm or leg.

After the establishment of the colony as described the lice were fed for periods varying between four and eight hours a day, depending on the numbers needed for insecticidal tests, the longer the period of feeding the more rapid being the multiplication in the colony. When not actually on the body the lice were maintained in the incubator under the conditions described except from Saturday evening until Monday morning when they

6. Moore, William, and Hirschfelder, A. D. An Investigation of the Louse Problem. Research Publications of the University of Minnesota 8, July 1919.

7. Wolbach, S. B., Todd, J. L., and Palfrey, F. V. The Ecology and Pathology of Typhus. League of Red Cross Societies at the Harvard University Press, Cambridge, Mass., 1927.

From the Dermatoses Investigations Section, Division of Industrial Hygiene, National Institute of Health.

1. Sikora, H., cited by Nuttall.  
2. Swellengrebel, N. H., and Otten, L. Experimentelle Beiträge zur Kenntnis der Übertragung der Pest durch Flohe und Läuse. Centralblatt für Bakteriologie 74: 592 (1914).

3. Belding, David L. Textbook of Clinical Parasitology. New York: D. Appleton-Century Company, 1942.

4. Nuttall, George H. F. The Part Played by *Pediculus Humanus* in the Causation of Disease. Parasitology 10: 43-79 (Nov.) 1917. Biology of *Pediculus Humanus* ibid., pp. 80-185.

5. Jameson, W. A. On Some Rarer Effects of *Pediculus*. Brit. J. Derm. 11: 121-131, 1888.

were taken home by various members of the staff of the Division of Zoology. During this time, when the lice were not actually feeding, the cages were kept in a pocket of the clothing of the individual

of single bites. In all, 15 different individuals acted as hosts. Some of the volunteers were observed over a period of six months or more.

#### EXPERIMENTAL DATA

*Cutaneous Reactions Following Louse Bites*—The type and intensity of the local reaction varied not only with the individual but with the number of lice fed and the length of time over which the feedings were continued.

Initial feedings over a period of six days with 30 to 50 lice resulted in pinpoint areas of redness at the site of the bites. When 200 lice were fed daily over this period the petechiae were more numerous. Little or no pruritus was encountered during the first week of exposure. However, local reactions were intensified following more prolonged exposure. After feeding



Fig 1—Inflammatory reaction on the calf of the leg of a hypersensitive person (volunteer 1 in the table) forty-eight hours after exposure to 500 lice for eight hours.



Fig 2—Vesicular reaction on arm of a hypersensitive person (volunteer 7) forty eight hours after exposure to 50 lice for three hours.

Owing to the method of breeding the parasites, it was possible for us to follow the cutaneous reactions produced by mass feedings of from 30 to 2,000 lice at one exposure. In several experiments, 1 to 3 lice were allowed to feed at a time in order to study the effects

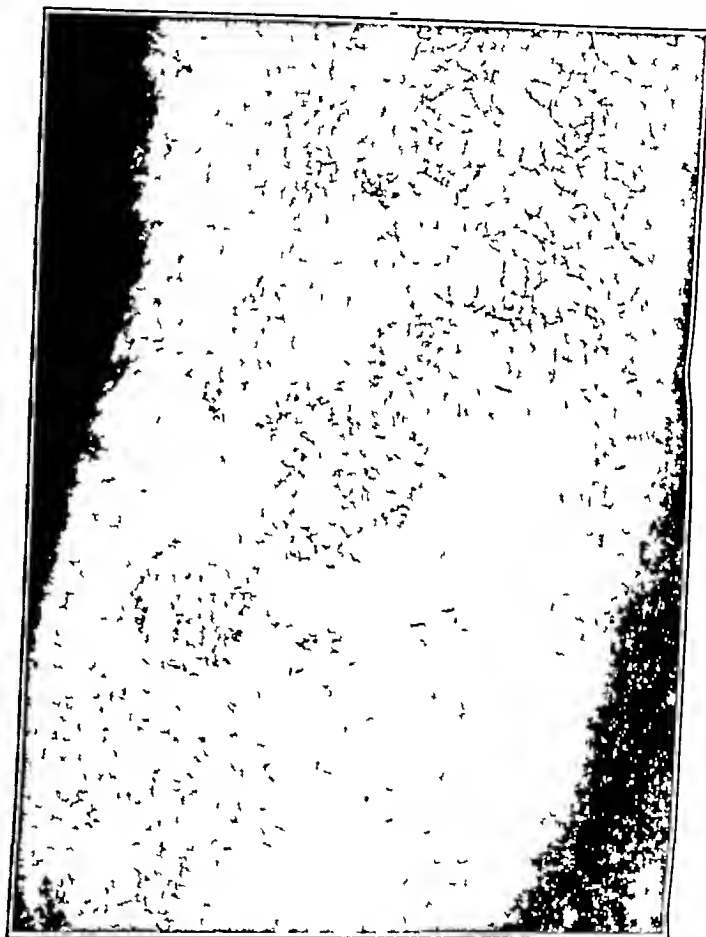


Fig 3—Purpuric reaction on the calf of the leg of a nonsensitive person (volunteer 6) after eight hours exposure to 500 lice.

periods from seven to seventeen days the immediate reaction consisted in a diffuse redness or scattered papular urticarial lesions. After twelve to twenty-four hours the erythema increased in intensity and an edema developed with an elevation of the exposed area above the surface of the skin. This reaction became more pronounced during the next forty-eight to seventy-two hours (fig 1). The erythema could be made to fade out on diascopic pressure. Vesicles appeared in some cases at the height of the reaction (fig 2). As the lesions became older they assumed a more cyanotic appearance and the livid color failed to disappear on pressure. After twelve to fourteen days there was a fading of the lesions with brownish pigmentation and fine scaling.

The pruritus usually became evident after the seventh day. In some cases redness and pruritus reappeared in old lesions following the exposure of new areas to

200 to 600 lice. Furthermore the application of light friction to old lesions frequently elicited pruritus which had subsided several weeks previously.

Individual variation in the reaction to the bites of the lice is illustrated by the following case descriptions.

One volunteer (5 in the table) fed increasing numbers of lice for a period of fifty days. During the last twenty-five days of this period approximately 2,000 lice were fed each day. The local inflammatory reaction became increasingly severe. Finally she developed a generalized papular eruption and the feedings had to be discontinued. Several days later she fed a single louse on the forearm as a result of which the generalized eruption reappeared.

Two of the subjects developed a definite inflammatory reaction following the first feeding of 50 lice. One of them had had pediculosis pubis five years previously but the other had no history of louse infestation. Another volunteer who had had *Phthirus pubis* infestation in 1925, showed the same type of sensitization as did the majority of the other subjects since a definite inflammatory reaction was not manifested until approximately 50 lice had been fed daily for seven days.

Two of the subjects (4 and 6 in the table) exhibited relatively little inflammatory reaction and pruritus from the louse bites although they fed 300 to 500 lice daily over a period of months. After one month one of these persons (4) developed at the feeding sites a moderately diffuse erythema with some pruritus. Over the succeeding months daily feedings continued without intensification of the local lesions. This person gave practically negative skin reactions to the louse antigens as shown in the table. The other volunteer (6) suffered slightly from pruritus and had a moderate petechiation at the site of the bites. Other than the development of purpura in twenty-four to forty-eight hour lesions, there was no increase in the reaction. The appearance of a hemorrhagic reaction greater than noted in the other volunteers may be due to the fact that platelet count of the subject on several occasions was found to be 320,000 (fig. 3). He also gave a negative skin test to the louse antigens.

No subjective symptoms other than pruritus were noted in any of our test subjects. Neither were we able to demonstrate a rise in temperature or an adenopathy in any one of them even when 2,000 lice were fed daily.

**The Effect of Individual Bites**—Since it was thought that the mass feeding experiments might mask clinical types of lesions which are actually produced in the course of louse infestations, feedings with single lice were carried out on the eighth volunteer, who had had *Phthirus pubis* infestation five years previously and who had exhibited a vesicular reaction following his first exposure to 50 lice on Dec. 29, 1942. On Jan. 26, 1943 3 lice were allowed to feed and on January 27, 28, 29 and 30 and February 2, 3 and 9, a single louse was permitted to feed on his forearms. The same female louse was used in the last four feedings.

After the act of feeding was completed there could be seen a pinpoint area of redness located at or near a pore, occasionally no change was seen as a result of the bite. In about eighteen to twenty-four hours a definite papule about 2 × 2 mm in diameter developed at the site of the bite and pruritus was felt. At the end of forty-eight hours the papule became somewhat elevated and the itching became more pronounced and persisted for about four days. By the end of a week only a minute brownish pinpoint area persisted at the site of the bite.

All subsequent feedings followed approximately the same pattern. The itching, which was never continuous but which would recur at intervals, was out of all proportion to the size of the lesion.

It could not be deduced whether sensitization occurred from several single louse bites since each bite seemed to follow about the same pattern. Furthermore the eighth volunteer was no doubt already hypersensitive. However it is apparent that the cutaneous

*Cutaneous Reactions with Lice and Head Antigens,  
March 16, 1943*

No. of Volun- teers	Antigen	Reaction after 24 hrs	Reaction after 72 hrs	Comment
1	F 1 F 2 H	++ ++ ++	+++ +++ +++	Reaction still present with severe pruritus for a week after intra dermal injection highly sensitive patient last feeding in February 1943
2	F 1 F 2 H	++ 0 0	+ 0 0	Last feeding 5 days previously has been feeding lice since 12/11/42 vesicular reaction to lice bites
3	F 1 F 2 H	++ ++ +	+ + ±	Fed lice just before the test has been feeding lice since 12/18/42 pronounced local reaction following lice bites
4	F 1 F 2 H	± 0 ±	0 0 0	Fed lice just before the test has been feeding lice since 11/30/42 relatively insensitive to lice bites
5	F 1 F 2 H (not done)	++ + +	+ ± ±	Fed lice 4 days previously when feeding was resumed after tests had become negative the previous test sites flared again
6	F 1 F 2 H	0 0 0	0 0 0	Fed lice day of test relatively insensitive to lice bites
7	F 1 F 2 H	++ ± +	+++ + +	Vesicles finally developed at F 1 in 72 hours primary reaction to lice bites was vesicular had <i>Phthirus pubis</i> 5 years previously
8	F 1 F 2 H	++ + +	+++ ± ±	Decidedly sensitive develops vesicular reaction from lice bites
Controls				
1	F 1 F 2 H	0 0 0	0 0 0	No previous infestation with lice
2	F 1 F 2 H	+++ ++ ±	+++ ± ±	Had <i>Phthirus pubis</i> a few days before tests were made
3	F 1 F 2 H	0 0 0	0 0 0	No previous infestation with lice
4	F 1 F 2 H	0 0 0	0 0 0	<i>Phthirus pubis</i> 8 years ago
5	F 1 F 2 H	0 0 0	0 0 0	No previous infestation with lice
6	F 1 F 2 H	0 0 0	0 0 0	No previous infestation with lice
7	F 1 F 2 H	0 0 0	0 0 0	No previous infestation with lice

F 1 feces antigen autoclaved F 2 Seltz filtered feces antigen H head antigen

0 no reaction ± area of redness little less than 1 cm not raised above skin level + area of redness 1-2 cm some induration ++ area of redness 2-3 cm some induration +++ area of redness 2-3 cm pronounced induration area of redness 1-2 cm studded with papules and surrounding zone of erythema ++++ area of redness 2-3 cm studded with papules and vesicles indurated usually with surrounding erythema

reactions following mass feedings differed only quantitatively from those produced in a hypersensitive person by a single louse.

**SKIN TESTING WITH FECES AND HEAD ANTIGENS**

Antigens for skin testing were prepared from the feces and from the heads of lice in an attempt to study the pathogenesis of the sensitivity which developed after repeated exposures.

**Head Antigen**—One hundred and fifty heads of lice removed at a point immediately anterior to the prothorax were ground in a sterile mortar and 10 cc of 1:12,500 merthiolate solution was added and the material further ground. The material was then centrifuged at high speed and the supernatant fluid was incubated

at 37 C for twenty-four hours. Aerobic and anaerobic cultures were made and proved to be sterile.

*Feces Antigens*—Feces deposited by the lice overnight were collected from the colonies and placed in a desiccator for twenty-four hours. They were then sealed and kept in the ice box until used.

Ten cc of distilled water was added to 40 mg of the desiccated louse feces. The mixture was ground up thoroughly in a mortar and the resulting mass was centrifuged at high speed. The supernatant fluid was divided into two parts. One part was autoclaved for twenty minutes under 15 pounds pressure. A great deal of material was precipitated and left a clear straw colored fluid. This was again centrifuged and the supernatant fluid was removed and enough 1:10,000 merthiolate solution added to it to make a final concentration of 1:10,000 merthiolate. The second portion was passed through a Seitz filter. About half was lost in the filtration process, the filtered fluid was a light

yellowish straw color. Enough 1:1,000 merthiolate solution was added to the filtrate to make the final concentration of merthiolate 1:10,000. Both portions were incubated at 37 C for twenty-four hours. Aerobic and anaerobic cultures were made which were sterile.

Cutaneous tests with the antigens previously described were carried out on March 16 on the 8 volunteers who had been used in the louse feeding experiment and on 7 controls. One of the controls (2 in the table) had had *Phthirus pubis* infestation a few days before he was tested and another (control 4) had *Phthirus pubis* infestation eight years previously. The other 5 controls had had no infestation with lice as far as we could find out.

In each instance 0.1 cc of the particular antigen was injected intradermally. The same amount of a 1:10,000 solution of merthiolate in distilled water was used as a control injection. Injections were made on the flexor surface of the forearm.

Following the injection of head or feces antigens there was an immediate reaction in nearly all the cases, including the controls. The head antigen caused an unusual amount of burning pain. In 6 of the volunteers and in 1 of the controls a delayed type reaction was noted in addition to the immediate reaction.

The immediate reaction consisted in the formation of a wheal, which in twenty minutes or longer increased in size with the formation of a zone of erythema. This reaction began to disappear in about an hour or two and there was no trace of it to be seen in twenty-four

hours. The delayed type of reaction began to appear after four to twelve hours and reached its peak in twenty-four to seventy-two hours. This reaction persisted for a week in some cases. The delayed reaction was characterized by an area of redness and induration from 1 to 3 cm in diameter. In unusually sensitive persons, papules and vesicles studded the indurated area and there was a variable surrounding zone of erythema (fig 4).

It can be seen from the table that the delayed reactions with feces and head antigens were obtained in those persons who exhibited an inflammatory reaction following lice bites. Volunteers 4 and 6, who exhibited purpuric reactions but practically no inflammatory reactions following exposure to lice, gave negative delayed skin reactions with both feces and head antigens. Volunteer 1, who exhibited the most pronounced skin reactions of all our volunteers following exposure to lice (fig 4), also gave the strongest delayed reaction. The delayed type of reaction therefore is a reaction of sensitivity which develops after exposure to the lice. It resembled that seen in persons exhibiting positive skin reactions after intradermal injection of trichophyton or tuberculin.

The only control to give a positive skin reaction with the feces and head antigens was control 2, who had *Phthirus pubis* infestation a few days before the tests were made. It would seem that infestation with *Phthirus pubis* might lead to cross sensitization to *Pediculus humanus* and/or its feces, since volunteer 6, who had had *Phthirus pubis* infestation five years previously, developed a vesicular reaction after his first exposure to 50 lice.

Heat did not destroy the skin reactive principle in louse feces. The autoclaved feces antigen was more active than that which passed through the Seitz filter. It has been noted in experiments with other antigens that some of the active principle was lost by filtration.

In no instance was the skin reaction to the head antigens positive when the feces antigen gave a negative reaction, but the reverse was true in a number of instances. Microscopic examination of the heads before preparation of the antigen showed fine particles of feces coating the surface of the head, thus the head antigen actually contained some fecal material. As far as the skin tests were concerned, the head antigen may have acted as a weak feces antigen.

#### COMMENT

Our findings are in accord with the observations of previous workers that the earliest manifestations of the louse bites are minute red, noninflammatory points which are flat with the skin. In most persons but little pain or itching was experienced during the initial feedings. When large numbers (300 to 500) of the parasites were allowed to feed by the wristlet method, a stinging sensation was sometimes experienced, especially if they were permitted to feed over a previously exposed area.

Repeated exposures to the lice resulted in the development of a hypersensitivity in the majority of persons exposed. Once the hypersensitivity became manifest, a pronounced inflammatory reaction developed at the site of exposure. In most instances it took practically daily exposures over a period of about seven to ten days before hypersensitivity became evident.

The skin reaction following exposure to the lice can be divided into two phases, a purpuric and an inflammatory phase. The introduction of the proboscis and the

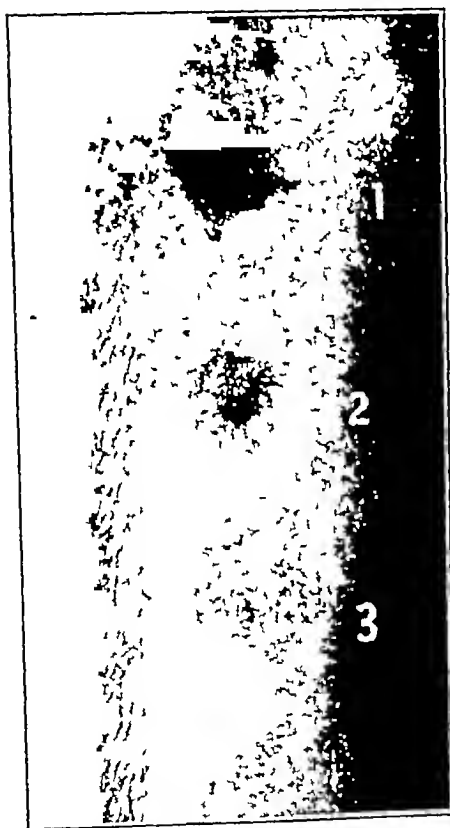


Fig. 4—Seventy two hour skin reactions in volunteer 1 following intradermal injection of autoclaved feces antigen at 1, head antigen at 2, and filtered feces antigen at 3.



act of feeding cause a minute hemorrhage which clinically is seen as a pinpoint redness. This goes on to an actual purpura from the capillary rupture. The degree of purpuric reaction is dependent on the susceptibility of the capillaries and the tendency of the person to bleed. Among our cases the greatest purpuric reaction was manifested by a person with a relatively low platelet count.

The inflammatory phase of the reaction is due to the hypersensitivity which develops. After single louse bites it was characterized by a papule with some surrounding erythema. When large numbers of lice were fed, the area of skin covered by the bottom of the can became red, edematous, somewhat indurated, raised above the level of the skin and in very sensitive persons studded with vesicles. The reaction reached its height in twenty-four to forty-eight hours and gradually subsided in about five to eight days with fine scaling leaving a brownish pigmentation.

After the development of hypersensitivity continued exposure to the lice did not result in a desensitization in the majority of the cases; the inflammatory reaction rather increased with each subsequent exposure. If feedings were discontinued for a week or two the level of sensitivity dropped in some persons. However, further sensitivity could be induced by subsequent exposures to the lice.

Pruritus became evident and paralleled in its severity the development of the inflammatory reaction. The itching was usually intense. Even in older already subsided lesions it could be reelicited by light brushing or scratching. The pruritus developed along with the syndrome of hypersensitivity, since in most individuals it was little in evidence during initial feedings.

No generalized reactions such as malaise, rise in temperature or adenopathy were observed in our cases, even though as many as 2,000 lice were fed daily by a single individual over relatively long periods of time. It is difficult to reconcile our experience with the observations of Nuttall,<sup>4</sup> Jameson,<sup>5</sup> and others<sup>6</sup> who believed that febrile reactions could be regularly induced by the feeding of large numbers of lice.

While a primary whealing usually followed the intradermal injection of antigens prepared from louse heads and feces, even in individuals who had no previous exposure to lice this promptly disappeared and was followed by a typical reaction of the delayed type which reached its height in twenty-four to seventy-two hours in persons developing a hypersensitivity after repeated exposures to lice. The positive skin reactions were greatest in those persons who manifested the most pronounced inflammatory reaction after exposure to the lice, while the skin reactions were negative in those persons who did not develop an inflammation following the bites. The head antigen was relatively less potent than the feces antigen but the relative potency of the two antigens is difficult to compare since equivalent amounts of feces and heads were not used and because by our method of preparation the head antigen also contained a very small quantity of feces. In this connection an attempt to dissociate the feces antigen from the head antigen might be made by desensitizing with feces antigen alone. However, we have not attempted such tests.

To our knowledge previous workers have not considered the possibility of the feces playing a role in the pathogenesis of the skin irritation following louse infestations. However, it would appear that the sensitivity which develops after repeated exposures to lice is

associated with presence of the feces. Our experiments throw no light on the question of sensitization being produced by the act of feeding. However, the head antigen never gave a positive skin test when the feces antigen resulted in a negative test. This fact would seem to offer evidence concerning the more important role of the feces in the production of sensitivity. It seems to us that it might be of practical importance to make sure that all of the feces is removed from the clothing of infested individuals as part of the delousing process where practical.

#### SUMMARY AND CONCLUSIONS

1 Repeated exposures to the body louse will result in the development of a dermal hypersensitivity to it in the majority of those exposed.

2 The feces of the louse play an important role in this induced reaction.

3 There are apparently two components to the "louse bite reaction": (a) The purpuric element due to the act of feeding and (b) the development of an inflammatory reaction following sensitization.

4 The pruritus accompanying infestation with lice seems to be mainly a part of the syndrome of hypersensitivity.

### A TREATMENT FOR PEDICULOSIS CAPITIS

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As part of a general program to devise methods for the control of typhus fever a systematic study was undertaken with a view to determining the louse-killing properties of various chemical agents. My purpose in this paper is to present results obtained by the use of some of these chemical agents in the control of head lice (*Pediculus humanus capitis* [Linnaeus] Retzius).

The older methods for the control of head lice can be found in various textbooks<sup>1</sup> and in Buxton's little monograph "The Louse."<sup>2</sup> Objections to these treatments arise almost as they are described. Shaving the scalp is effective but hardly appealing. Soaking the hair for an hour in 70 per cent alcohol, 2 per cent phenol, veratrine, larkspur vinegar or similar preparations is time consuming and only too often ineffective or irritant. Essential oils are effective in adequate dosage but expensive and odorous. Kerosene, crude petroleum and xylene similarly are liable to leave an odor unless washed out thoroughly and are unpleasant. The fumigation of the scalp by sulfur dioxide, mentioned by Buxton as a common practice in Germany, is clumsy and leaves the head immediately susceptible to reinfestation. The removal of head lice by a fine-toothed comb is tedious to say the least. Probably the best of the older methods is theunction of the scalp with ointment containing such agents as xylene, pyrethrum or rotenone. More recently Busvine and

From the Laboratories of the International Health Division of the Rockefeller Foundation.

1 Craig C. F. and Faust E. C. *Clinical Parasitology*. Philadelphia: Lea & Febiger, 1940. Goodman L. S. and Gilman Alfred. *The Pharmacological Basis of Therapeutics*. New York: Macmillan Company, 1941. Musser J. H. *Internal Medicine, Its Theory and Practice*. Philadelphia: Lea & Febiger, 1938. Riley W. A. and Johansen O. A. *Medical Entomology: A Survey of Insects and Allied Forms Which Affect the Health of Men and Animals*. New York: McGraw-Hill Book Company, Inc., 1938.

2 Buxton P. A. *The Louse: An Account of the Lice Which Infest Man, Their Medical Importance and Control*. Baltimore: Williams & Wilkins Company, 1940.

Buxton<sup>3</sup> have incorporated thiocyanates in ointments and report excellent results. Yet such grease may be unpleasant or tedious to rub into women's hair. The ideal method for treating pediculosis capitis should be by a lotion, since only a liquid can easily penetrate the entire hair and leave a residual for prolonged action. The fluid should rapidly kill lice and nits, should not have unpleasant properties such as greasiness, staining or odor and should be both cheap and lasting. Systematic laboratory studies revealed several materials with these properties. Phenyl cellosolve and benzyl cellosolve<sup>4</sup> were the most efficient and were readily available. Preliminary trials indicated that, if a 10 per cent concentration of these cellosolves was put onto cloth, it killed all lice on the cloth in less than three hours, nits exposed to the same dosage failed to hatch. A 40 per cent concentration of phenyl cellosolve placed on the head was not irritant and could be detected for about four days. Therefore, clinical trials of these agents were made. For simplicity only phenyl cellosolve was used on human beings.

#### RESULTS OF CLINICAL APPLICATION

*Results of Trial on Children*—Through the courtesy of Dr. Robert E. Cox, resident pediatrician at Bellevue Hospital in New York, a lotion for the treatment of pediculosis capitis was tried on more than 50 children who were hospitalized for various reasons. The material was applied as soon as lice were discovered, and the nurses reexamined the children at intervals throughout their hospital stay. The lotion included methyl salicylate as a perfume, because this essential oil gave it a "clean smell."

The formula used was phenyl cellosolve 40 per cent, ethanol 30 per cent, water 25 per cent and methyl salicylate 5 per cent. The nurses were asked to apply the lotion to the head so that the hair was thoroughly wet and cautioned to keep the fluid out of the eyes and mouths of the children. No further treatment was used. The results were quite satisfactory. No live lice were ever found after a single treatment. No irritation was observed except a brief mild tingling if the lotion was rubbed into the scalp.

*Results of Trial in Mexican Villages*—In cooperation with the Mexican Department of Public Health studies on the delousing of entire villages were made. The eradication of head lice constituted a part of a general program, which will be reported elsewhere in collaboration with Drs. Malo Juvera and Hernandez Lira of Mexico. In all 1,278 persons were treated. Of these, 989 were known to have head lice. The treatments were made in the homes by nurses and sanitary inspectors who had been trained in the technique of delousing.

The formula used was phenyl cellosolve 1 gallon, ethanol 2 gallons, water 2 gallons and methyl salicylate (to give a slight odor). While it was impossible to be sure that every louse on every head was killed, it seemed likely that this was the result. About 200 heads were examined a week after treatment and not a single louse was found. No more examinations were made because such searching was not tactful and because it was impossible to be sure that there were no lice in the long hair of the women. Probably the best evi-

dence for the effectiveness of the lotion came from the subjects, who regularly stated their satisfaction with the head lotion though they were candid enough on other treatments. Soon after the public health workers had left the house the treated people could be seen examining one another's heads. Fortunately the material so stunned the lice that they appeared dead or sick in a few minutes. This dramatic effect was helpful in carrying on the program of delousing.

#### COMMENT

The chief advantages of the lotions described were ease of application, rapidity of action, freedom from irritant action and efficiency against both insects and eggs. The cost was about 1 cent per treatment in Mexico. The disadvantages were slight. Nits were left on the hair. The lotions produced a moderate burning if applied to such tender areas as the eyes, mouth or perineum. The preliminary laboratory trials suggested that the cellosolve left the hair in a few days.

It is obvious that many more formulas can be prepared which are similar to those described. Other perfumes, such as eucalyptus oil, may be substituted for methyl salicylate. The shipping space of the lotion can be reduced by eliminating alcohol and producing an emulsion by means of a detergent. The long-lasting insecticide "G. N. B." ( $\alpha, \alpha$ -di[4-chlorophenyl]- $\beta, \beta$ -trichlorethane) can be incorporated in either of the cellosolves or benzyl benzoate and used in the form of an emulsion. A number of these alternative formulas have been prepared and tested in the laboratory and plans are under way to test them on human beings in the near future.

No suggestion is made that the lotions described constitute the only effective treatment of pediculosis capitis, but it is emphasized that the usual methods for killing pediculi are clumsy and relatively ineffective, and the type of lotions described should be generally adopted for the eradication of head lice.

#### SUMMARY

As a result of studies on chemical agents which kill lice a number of lotions have been prepared which are rapidly effective against head lice and their eggs, are cheap and easy to use, and possess almost no unpleasant properties.

Two lotions, the formulas of which are given, proved to be quite satisfactory for the treatment of pediculosis capitis on children in an American hospital and on civilian populations in Mexico. They are recommended for general use in the control of head lice.

*Prevention of Infectious Disease*—In order to prevent infectious disease the first important step is to determine the natural history of the causative organism, and this of course includes the means of access to the body. Some organisms are conveyed by food or drink, or through the air. Others enter the body as the result of direct contact of the skin tacked with the malignant pustule of anthrax—primarily a disease of animals—which develops on the back of the neck where the infected hides are most liable to rub. The same disease sometimes attacks the faces of people who are unfortunate enough to have bought and used unsterilized and infected shaving brushes. Wool sorters, on the other hand, are more likely to develop the disease in their lungs, since they are constantly inhaling quantities of dust which sometimes contains spores of the anthrax bacillus—Haagensen, C. D., and Lloyd, Windham E. B. *A Hundred Years of Medicine*, New York, Sheridan House, Inc., 1943.

<sup>3</sup> Busvine, J. R., and Buxton, P. A. A New Method of Controlling the Head Louse, Brit. M. J. 1, 464-466 (April 11) 1942.

<sup>4</sup> Cellosolve is the trade name for certain solvents made by the Carbon and Carbide Chemicals Corporation, phenyl and benzyl cellosolves are, respectively, the monophenyl and monobenzyl ethers of ethylene glycol.

EFFECT OF STORAGE OF CITRATED  
BLOOD ON THE SURVIVAL OF  
TRANSFUSED ERYTHROCYTES

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AND

MILAN A. CHAPIN, PhD MD

BOSTON

The radioactive isotope of iron  $^{59}\text{Fe}$  is metabolized by the human organism exactly as ordinary iron and when fed to or injected into persons with the hypochromic anemia of iron deficiency is incorporated into the hemoglobin of newly formed erythrocytes.<sup>1</sup> Once built into the hemoglobin molecule of an erythrocyte, radioactive iron does not exchange with the iron of the serum or the tissues<sup>2</sup> but remains within the red blood cell during its entire lifetime and is liberated only when the cell is broken down and destroyed. The physical property of radioactivity does not influence the morphologic aspects or the function of the erythrocyte in any way but serves to label or "tag" the cell during its lifetime. It is possible to detect quantitatively the radioactive iron of such labeled cells even though they may be mixed with thousands of cells containing no radioactive substance.<sup>3</sup>

When erythrocytes labeled with radioactive iron are transfused into compatible human subjects they rapidly mix with the recipient's cells and can be detected quantitatively in samples of the recipient's blood. If these tagged cells are destroyed after transfusion, the concentration of radioactively labeled cells in the recipient's blood progressively decreases, and the radioactivity determined on consecutive samples of the recipient's blood will reveal the rate at which the transfused cells are destroyed. The effectiveness of various blood preservatives can thus be evaluated by observing their influence on the survival of transfused tagged erythrocytes.

We have studied the effect of the storing of citrated blood on the survival of transfused erythrocytes, and we present our observations as illustrative of the technique as well as of the adverse effect of sodium citrate as a blood preservative.

## METHODS AND PROCEDURE

Iron containing the radioactive isotope  $\text{Fe}^{59}$  was fed as ferrous sulfate or injected intramuscularly as ferrous ammonium citrate into patients with the hypochromic anemia of iron deficiency.<sup>4</sup> As indicated in chart 1, the radioactive material was rapidly incorporated into the hemoglobin of newly formed erythrocytes. The maximum concentration of radioactivity achieved in these experiments was 2,000 counts<sup>5</sup> per minute per cubic centimeter of packed erythrocytes.

After sufficient radioactive iron had been incorporated into the erythrocytes of such donor subjects, venesection was performed aseptically, and the blood was drawn into sterile 2.5 per cent sodium citrate solution with a  $pH$  of 7.4. The final con-

centration of sodium citrate at completion of the venesection was 0.25 Gm per hundred cubic centimeters of blood.

This donor blood was immediately divided into 55 cc aliquots and placed in sterile 150 cc Erlenmeyer flasks stoppered with gauze and nonabsorbent cotton. The flasks were stored in the dark in a refrigerator at a temperature of 10 C. Hematologic studies and determinations of radioactivity were carried out on aliquots of this blood.<sup>6</sup>

After storage for periods varying from one to fourteen days, 40 or 50 cc aliquots of this labeled blood were injected intravenously into healthy human adults (interns and technicians) all of whom showed normal red cell and hemoglobin levels. Solutions of Evans blue dye (T-1824) were injected immediately prior to the injections of blood, so that the plasma volume could be determined by the method of Gibson and Evelyn.<sup>6</sup> At varying intervals of time after the injection of the blood and dye, samples of venous blood were removed without hemostasis from an antecubital vein of the opposite arm. A portion of each sample was placed in a chemically clean calibrated centrifuge tube and allowed to clot, and the remainder was placed in a tube containing the oxalate mixture of Heller and Paul.<sup>7</sup>

Complete hematologic studies and determinations of the dye content of the serum<sup>6</sup> and of the concentration of radioactive iron in the blood and in the cell mass were made on each sample of blood.<sup>3</sup> The total blood and cell volumes were calculated by the method of Gibson and Evelyn.<sup>6</sup> The total radioactivity in circulation at the time each sample was withdrawn was calculated from the formula

$$\text{Total radioactivity in circulation} = \frac{\text{Radioactivity per cubic centimeter of blood} \times \text{total blood volume}}$$

The percentage of the total transfused radioactively tagged cells in circulation at any given time was calculated from the formula

$$\text{Per cent of transfused radioactivity in circulation} = \frac{\text{Total radioactivity in circulation}}{\text{Total radioactivity of the transfused blood}}$$

Determinations of the radioactivity of aliquots of the transfused blood always were made in conjunction with similar determinations on samples of the recipient's blood, eliminating the necessity of corrections for decay of the radioactive iron and counting tube variation.

## RESULTS

Charts 2 and 3 illustrate the effect of storage of citrated blood on the survival of transfused erythrocytes. The number of days that the blood was stored before transfusion is indicated by the circled numbers. In the first series of experiments (chart 2) each recipient received 40 cc of the labeled blood. This blood contained 96 cc. of red blood cells and 2.45 Gm of hemoglobin. The maximum age of the labeled erythrocytes from the time of formation until removal from the donor by venesection was fifty-one days (since the first dose of radioactive iron had been fed to the donor fifty-one days before the venesection). The donor blood in the second series of experiments (chart 3) was removed from the donor thirteen days after a single intramuscular injection of radioactive iron, and therefore the maximum age of the labeled erythrocytes in this blood was not more than thirteen days. Each recipient in this series of experiments received an injection of 50 cc of labeled blood containing 21.4 cc of cells and 5.5 Gm of hemoglobin.

In both series of experiments the destruction of the transfused erythrocytes was rapid immediately after injection but subsequently progressed at a slower and steadily decreasing rate. This suggests that some of the stored erythrocytes were more resistant to destruc-

From the Evans Memorial Massachusetts Memorial Hospitals, and the Department of Medicine Boston University School of Medicine.

1. Ross J. F. and Chapin M. A. The Selective Absorption of Radioactive Iron by Normal and Iron Deficient Human Subjects. *J. Clin. Investigation* 20: 437 (July) 1941.

2. Hahn P. F., Bale W. F., Ross J. F., Hettig R. A., and Whipple G. H. Radio Iron in Plasma Does Not Exchange with Hemoglobin Iron in Red Cells. *Science* 82: 131 (Aug. 9) 1940.

3. Ross J. F. and Chapin, M. A. The Electrolytic Separation of Radioactive Iron from the Blood. *Rev. Scient. Instruments* 13: 77 (Feb.) 1942.

4. The radioactive isotope of iron was prepared by deuteron bombardment of iron phosphate probes in the Harvard cyclotron through the aid of Dr. B. R. Curtis.

5. The counts are those recorded with a modified Geiger Muller counter and scaling circuit.

6. Gibson J. G. and Evelyn K. A. Clinical Studies of the Blood Volume. IV. Adaptation of the Method to the Photoelectric Microcolorimeter. *J. Clin. Investigation* 17: 153 (March) 1938.

7. Heller A. G. and Paul, H. Change in Cell Volume Produced by Varying Concentrations of Different Anticoagulants. *J. Lab. & Clin. Med.* 19: 777 (April) 1934.

tion than others, but such an interpretation must be made with reservations. As noted in a later paragraph, a few hours after transfusion the radioactivity of the red cell mass represents not only the survival of transfused erythrocytes but the presence of newly formed red cells as well. The number of such newly formed

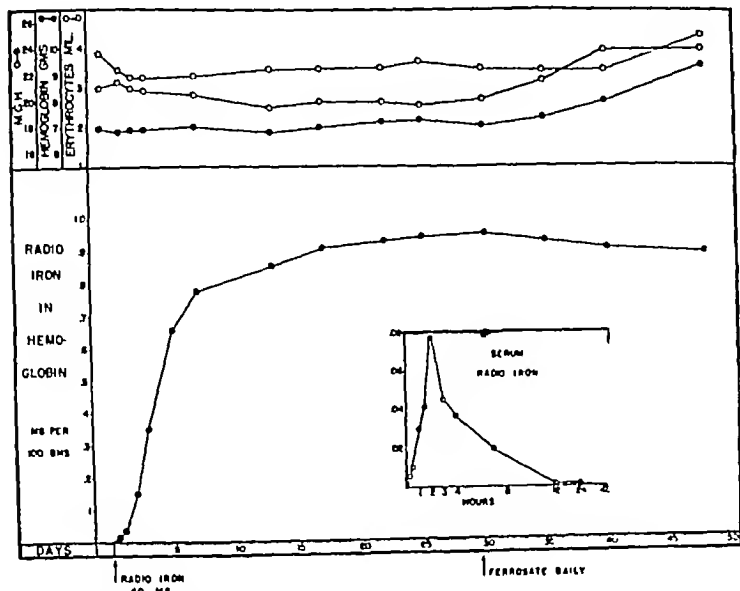


Chart 1—Incorporation of radioactive iron in the hemoglobin and erythrocytes in a case of hypochromic anemia of iron deficiency. Iron containing the radioactive isotope  $Fe^{59}$  was fed as ferrous sulfate

cells is quite small for a period of several days, however, and we believe that the concentration of radioactivity in the erythrocytes during this time is a qualitative indication of the survival of transfused cells.

Prolongation of storage greatly increased the rate of destruction of the transfused cells, and the percentage surviving for twenty-four hours varied inversely with the length of storage time as illustrated in chart 4.

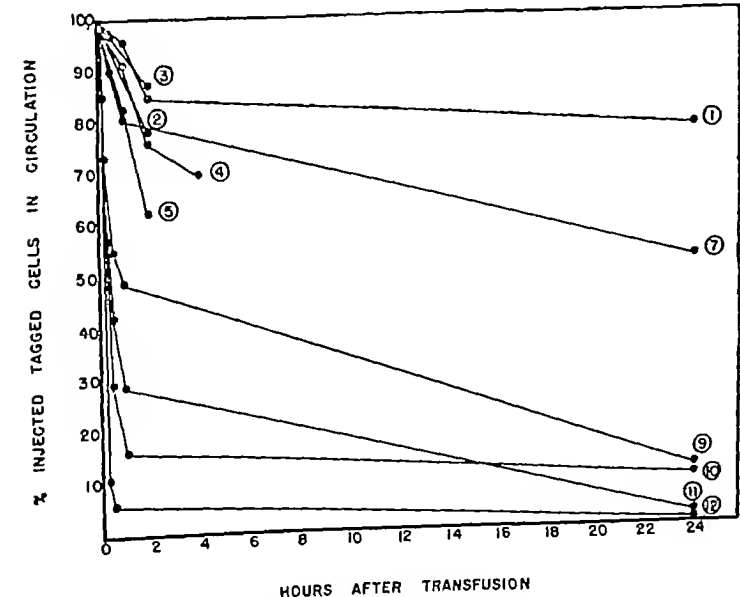


Chart 2—The posttransfusion survival of erythrocytes stored in citrated blood. The circled numbers indicate the number of days the citrated blood was stored prior to transfusion

The slightly more rapid destruction of the transfused cells in the first series of observations (chart 2) may be related to the fact that the maximum age of the transfused labeled erythrocytes in this series was almost four times greater (51 days) than the maximum age (13 days) of the labeled cells in the second series of observations (chart 3).

In the second series of experiments the determinations of erythrocyte radioactive iron concentration were made several days after the transfusion of radioactively labeled cells. After the initial decrease in radioactive iron concentration, which continued for approximately twenty-four hours, the concentration of radioactive iron in the red cells began to increase (chart 5). This increase was definite in each case studied and occurred at a fairly constant rate.

These changes in concentration of radioactivity might be explained by assuming a temporary immobilization and eventual release of the transfused tagged erythrocytes. Since there is considerable evidence that there is no storage site or reservoir for red blood cells and that all erythrocytes are in active circulation at all times,<sup>8</sup> it appears unlikely that the pronounced changes in concentration of radioactive iron can be accounted for on the basis of a temporary storage of cells. It appears much more probable that the rapid decrease in concentration of radioactivity immediately following transfusion represents destruction of transfused cells.

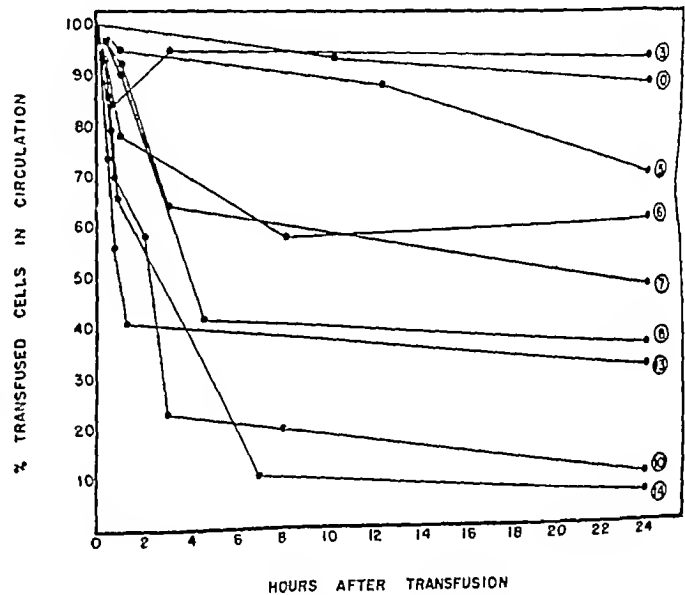


Chart 3—The posttransfusion survival of erythrocytes stored in citrated blood. The circled numbers indicate the number of days the citrated blood was stored prior to transfusion

and that the subsequent progressive increase represents a reutilization of the labeled iron originally contained in the transfused cells. The iron liberated from destroyed erythrocytes appears to be used for the synthesis of hemoglobin in preference to and more rapidly than the iron present in the blood plasma, the tissue reserves or foodstuffs. This observation raises a question as to whether or not some of the products of hemoglobin breakdown can be reused for the synthesis of hemoglobin while still in a fairly complex state and without being completely broken down. Somewhat similar observations have been reported by Cruz, Halin and Bale,<sup>9</sup> who observed rapid reutilization of erythrocyte radioactive iron for the synthesis of hemoglobin after the acute hemolytic anemia of acetylphenylhydrazine poisoning.

8. Hahn, P. F., Ross, J. F., Bale, W. F., Balfour, W. M., and Whipple, G. H. Red Cell and Plasma Volumes (Circulating and Total) as Determined by Radio Iron and by Dye. *J. Exper. Med.* 75: 221 (Feb) 1942.  
9. Cruz, W. O., Hahn, P. F., and Bale, W. F. Hemoglobin Radioactive Iron Liberated by Erythrocyte Destruction (Acetylphenylhydrazine) Promptly Reutilized to Form New Hemoglobin. *Am. J. Physiol.* 135: 595 (Feb) 1942.

The conservation of the hemoglobin-radioactive iron of transfused blood cells is illustrated in chart 6 which also demonstrates the feasibility of following the fate of the radioactive iron of transfused cells in the circulation over long periods. In this experiment blood containing radioactively tagged cells was transfused into a patient with prerenal nocturnal hemoglobinuria and the concentration of radioactivity per unit volume of blood and of cells was followed over a period of four months. In spite of wide variations in the hematocrit reading and in the concentration of radioactivity in the red cells, the concentration of radioactivity in the whole blood was fairly constant for almost four months.

#### COMMENT

The value of a blood preservative must be judged not by its ability to prevent *in vitro* hemolysis, changes in osmotic fragility, cellular potassium content and so on but by its effectiveness in prolonging the *in vivo* survival of transfused erythrocytes. The radioactively tagged cell method is particularly suited to evaluating the effectiveness of blood preservatives since it actually allows the number of transfused donor cells surviving

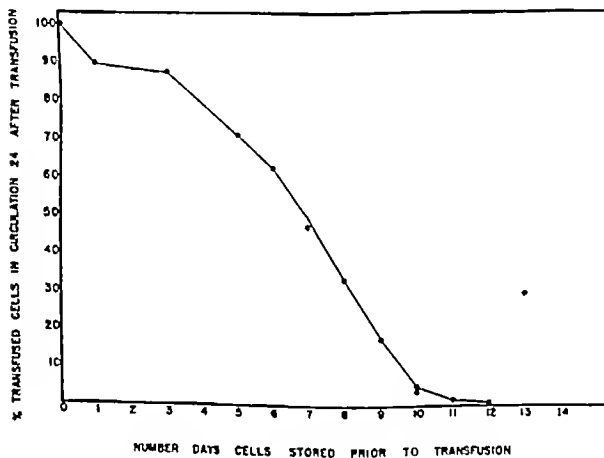


Chart 4—Effect of storage of citrated blood on the survival of transfused erythrocytes.

in the recipient to be quantitatively determined. The technique is so sensitive that 0.0005 cc of transfused cells can be detected in 10 cc of the recipient's blood with an accuracy of  $\pm 10$  per cent, and the total volume of labeled cells which needs be injected into the recipient is so small that it produces no hemodynamic or hemopoietic disturbance.

It is apparent from our studies that the breakdown products of hemoglobin are rapidly reutilized for the synthesis of new hemoglobin. This rapid reutilization of radioactive iron from destroyed transfused cells makes it impossible to trace with accuracy the survival of these cells for more than forty-eight hours after transfusion. In most instances, however, it is the initial twenty-four to forty-eight hours after transfusion in which the survival of transfused cells is of greatest importance.

The rapid reutilization of hemoglobin breakdown products is of considerable practical as well as theoretical interest, since it indicates that even though transfused cells are rapidly destroyed they are of distinct therapeutic value in promoting blood formation. As already mentioned, the rapid and preferential reutilization of iron from destroyed erythrocytes suggests

that the hemoglobin molecule may be built up from fairly complex remnants of destroyed hemoglobin.

Storage of citrated blood exerts a deleterious effect on erythrocytes. When continued for six days only 50 per cent of the transfused cells survived for twenty-four hours, and when storage was prolonged for ten

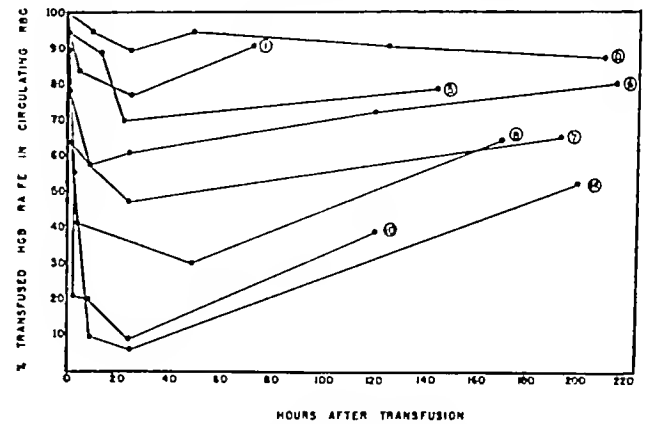


Chart 5—The reutilization of radioactive iron from destroyed transfused erythrocytes. The circled numbers indicate the number of days the citrated blood was stored prior to transfusion.

days or longer less than 10 per cent of the cells survived for twenty-four hours. These observations corroborate the findings of other investigators<sup>10</sup> that citrated blood is unsatisfactory for blood transfusion when stored for more than two or three days.

#### SUMMARY

- 1 The survival *in vivo* of transfused erythrocytes and the effectiveness of blood preservatives in prolonging such survival can readily be determined by the use of donor red blood cells labeled with radioactive iron.
- 2 The storage of citrated blood exerts a deleterious effect on the survival of transfused erythrocytes. The survival of these erythrocytes varies inversely with the duration of storage.

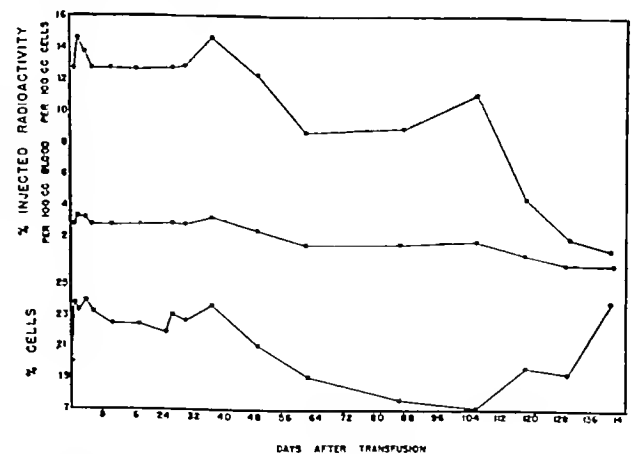


Chart 6—The conservation of the radioactive iron of transfused erythrocytes.

- 3 The iron of destroyed transfused erythrocytes is rapidly and preferentially reutilized for the synthesis of hemoglobin.

65 East Newton Street.

10 Belk W. P. and Barnes B. C. The Survival Time After Transfusion of Erythrocytes of Citrated Human Blood Stored at 4 to 6 Centigrade. *Am. J. M. Sc.* 201: 838 (June) 1941. Strumia M. M. The Fate of Transfused Refrigerated Blood and the Problem of Blood Bank S. *Clin. North America* 22: 1693 (Dec.) 1942.



## Clinical Notes, Suggestions and New Instruments

### PROTECTION AGAINST WELDING FUMES

A NEW COMPRESSED AIR UNIT FOR VENTILATING WELDERS HOODS

L. R. KRASNO, PH D, R. J. DE MOTTE, M D, AND A. C. ILL, PH D, M D, CHICAGO

The deleterious effects of welding fumes, especially those arising from galvanized metals ("galvo fever"), are well known.

Previous methods for protecting the welder have not been satisfactory. The use of a respirator has failed because it is cumbersome and does not fit well beneath the welder's hood. The welder objects to the discomfort of wearing the respirator on his face throughout the working day. Those compressed air ventilating devices for the hood which have been provided to date have not been constructed so as to prevent fumes from entering the hood and to avoid the criticisms and complaints of the welder.

The present compressed air unit for ventilating the welder's hood consists of a metal tube bent to form a rectangle of such dimensions that it may be placed in and attached to the hood so as to surround the glass window completely. The metal tube is perforated along the outer edge of the rectangle with holes  $\frac{1}{16}$  inch in size and  $\frac{1}{8}$  inch apart. That is, the perforations direct the flow of air away from the glass window and parallel to the face of all surfaces of the hood (fig 1). This arrangement is important, because an outward flowing spray of air surrounds the entire field about the nose and mouth and produces a "shielding out" effect of the flow of air which (a) prevents fumes from being drawn into the mask, (b) avoids drafts on the face and eyes of the welder and (c) at the same time prevents sweating and soiling of the eyes.

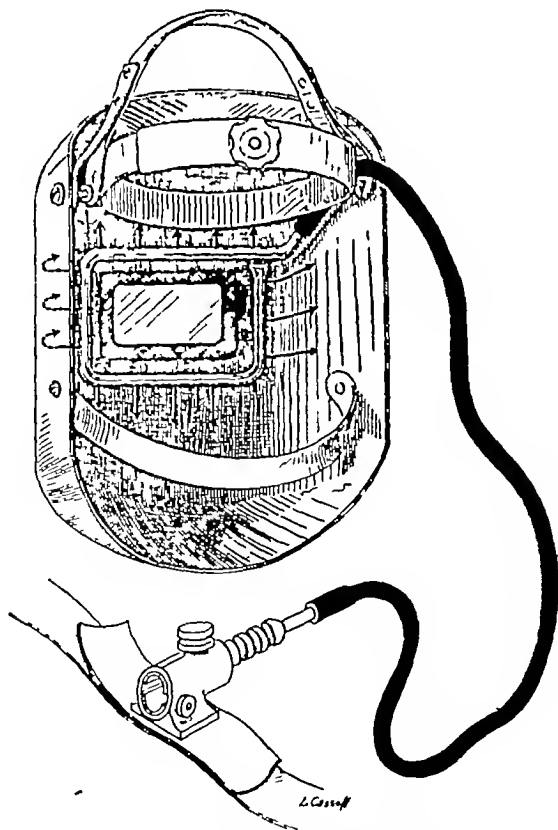


Fig 1—Compressed air unit for ventilating welder's hood. Metal tube, surrounding window, directs outward flowing spray of air.

At the primary compressed air source a filter is inserted to trap impurities which sometimes contaminate compressed air lines in industry. This primary filter also serves as a pressure reducing valve. A rubber tube is used to lead the air from the fixed metal outlet to a reducing valve attached to a belt about the waist of the welder. In this way the pull of the rubber

tubing does not hamper the welder, a complaint which obtains when the rubber tubing pulls directly against the hood (fig 2). The reducing valve, which is small, renders it possible for the welder to regulate the rate of air flow into his hood according to his individual likes or needs and any fluctuations of pressure in the main line. This is an important feature, since a perfect device is of no value unless the worker will wear it.



Fig 2—Rubber tubing does not pull directly against hood.

Experience with this welder's ventilated hood justifies the following statements:

1. Welding fumes do not enter the hood even when welding directly over and close to the arc.
2. The atmosphere in the mask is cool, which prevents perspiration and soiling of the eyes.
3. A constant supply of "fresh" air is supplied the welder.
4. It prevents the necessity of using alternating shifts of men on galvanized welding jobs.
5. The men like the device and insist on wearing it after once trying it.

303 East Chicago Avenue.

### SPONTANEOUS HEPATICOCASTRIC BILIARY FISTULA

LIEUTENANT COLONEL H. B. JENKINS  
MEDICAL CORPS ARMY OF THE UNITED STATES

This case is reported for three reasons: (1) No other cases have been encountered in the literature, (2) symptoms which suggested biliary tract disease were absent and (3) any type of biliary fistula in the age group of the patient is rare.

Judd and Burden<sup>1</sup> in 1925, in reporting 153 cases of spontaneous internal biliary fistula from the Mayo Clinic, stated that they were not aware of any cases in the literature in which the fistula originated in the hepatic duct. Dean<sup>2</sup> in June 1939 reported the first case of hepatoduodenal fistula and Puestow<sup>3</sup> in June 1942 reported a similar case. No other case of spontaneous internal biliary fistula originating in the hepatic duct has been found in the literature.

Spontaneous internal biliary fistulas from any origin terminating in the stomach are rare. Of the 200 cases reported by

From the Surgical Service of the Station Hospital, Camp Gordon, Georgia.

1. Judd, E. S. and Burden, V. G. Internal Biliary Fistula. Ann Surg 81: 305 (Jan) 1925.
2. Dean, Gilbert O. A Discussion of Internal Biliary Fistulas Based on Twenty Nine Cases, Surgery 5: 857 (June) 1939.
3. Puestow, Charles B. Spontaneous Internal Biliary Fistula. Ann Surg 115: 1043 (June) 1942.

Nathan<sup>4</sup> only 8 involved the stomach, and of the 153 cases in the series of Judd and Burden<sup>1</sup> the stomach was involved in only 6, with all cases in both series originating in the gallbladder. The most frequent fistulas are the cholecystoduodenal, the cholecystocolic, the cholecystogastic and the choledochoduodenal in the order named. Other types have been reported and are relatively rare. The frequency of all types of spontaneous internal biliary fistulas may be deduced from the following reports: 109 fistulas found in 6,263 biliary operations by Bernhard<sup>5</sup>; 43 fistulas in 10,866 routine necropsies by Roth, Schroeder and Schloth<sup>6</sup>; 5 fistulas among 15,677 operative cases in Surgical Section A at the Hospital of the University of Pennsylvania from 1922 to 1929 according to Elrison and Stevens,<sup>6</sup> and approximately 12 per cent of all patients with cholecystitis admitted to the University Hospitals of Iowa since 1915 as reported by Dean.<sup>2</sup>

Of the 153 cases reported by Judd and Burden,<sup>1</sup> 111 were in females and most of the cases occurred in the sixth decade of life. All cases occurred beyond the fourth decade with 1 exception, which was in the 20 to 30 year age group. The average duration of symptoms in this series was ten years, but in 1 case the symptoms had existed only one month.

The usual history in spontaneous internal biliary fistula, according to Walters and Snell,<sup>7</sup> is that of chronic cholecystic disease with colic, jaundice and symptoms of acute cholecystitis which are more or less miraculously relieved after a severe attack indicating that the gallbladder had emptied its contents into the intestinal tract.

The diagnosis of spontaneous internal biliary fistula was made preoperatively in 2 cases of the 153 reported by Judd and Burden,<sup>1</sup> and to date Garland and Brown<sup>8</sup> have reported approximately 90 cases recorded in the literature as diagnosed by x-ray prior to operation.



Fig 1—Hepaticogastric fistula partly filled with barium

#### REPORT OF CASE

A white soldier aged 26, a native of Ohio with three months' army service was admitted to the Station Hospital Camp Gordon, Georgia, at 10 35 a m April 11, 1943. The

following admission notes were made by the ward surgeon: "The onset of the present illness occurred at about 2 p m yesterday with dull pain in the midepigastrium which gradually moved to the right side of the abdomen above McBurney's point and below the gallbladder region. There was no radiation to the back, shoulders or groin. Some nausea and anorexia occurred but no vomiting or diarrhea. The bowels were

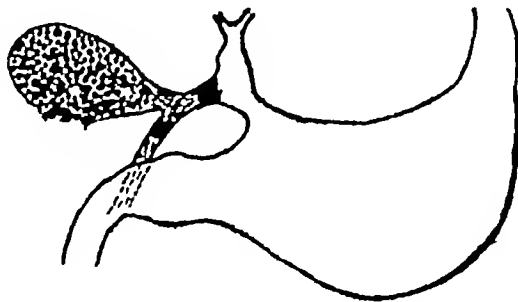


Fig 2—Hepaticogastric fistula; stones in hepatic and common ducts; fibrous degeneration of cystic and common ducts and distal portion of hepatic duct and perforated gallbladder impacted with stones

normal. There was no dyspepsia or urinary frequency. Appendectomy was done three years ago. The pain was cramping at times for brief intervals since reporting at sick call this morning and it hurt worse on deep breathing. There was a slight nonproductive cough today. No habitual or recurrent dyspepsia had occurred in the past. The patient was never jaundiced. There was no food intolerance. The patient had always been in excellent health and other than measles, chickenpox and whooping cough, which he was told that he had had in early childhood, he could not recall any illness that he had had except one attack of appendicitis in May 1941, for which he had had an immediate appendectomy and from which he made an uneventful recovery, being hospitalized only eight days. He had never had any intolerance to any food, had never had any abdominal pain or distress other than when operated on for appendicitis and with his present illness, had never suffered from constipation or diarrhea and had never had any discoloration of the skin. The patient was well developed and nourished, of slender type, was 6 feet (183 cm) high and weighed 172 pounds (78 Kg). All physical findings were negative except slight dullness to percussion and harsh breath sounds at the left posterior base of the lungs and slight spasticity and tenderness of the right abdomen with no point tenderness. A well healed old McBurney incision was noted. Blood pressure was 130/80, temperature 100.4 F, pulse rate 100, respiratory rate 20. The white blood cell count was 18,600 with a differential count showing 65 per cent segmented cells, 29 per cent lymphocytes, 5 per cent eosinophils and 1 per cent mononuclears. Urinalysis was negative.

At 2 p m the temperature was 99.8 F and at 9 30 p m was 102 F with no other changes in the physical findings. X-ray examination of the chest at this time with the patient in the sitting posture showed lungs clear and no air under the diaphragm. At 10 30 p m the surgical officer of the day was called to see the patient and in turn called me. At about 10 45 p m the patient was in acute distress with breathing short and labored and the abdomen moderately distended with generalized abdominal tenderness but pronounced point tenderness over the gallbladder. There was pronounced right rectus rigidity with increased spasticity over the entire abdomen. The temperature at this time was 98 F, pulse rate 112 and blood pressure 130/80. A tentative diagnosis of general peritonitis due to a perforated perigastric abscess secondary to a penetrating ulcer or due to a perforated gangrenous gallbladder was made and the patient prepared for surgery.

Under closed ether-oxygen inhalation anesthesia a high right rectus incision was made and when the peritoneum was opened

<sup>4</sup> Cited by Judd and Burden.<sup>1</sup>  
<sup>5</sup> Bernhard cited by Delano, Percy J. Internal Biliary Fistula. *Am. J. Roentgenol.* 47:298 (Feb) 1942.  
<sup>6</sup> Elrison, E. L. and Stevens, L. W. Spontaneous Internal Biliary Fistula. *Am. J. Surg.* 51:387 (Feb) 1941.  
<sup>7</sup> Walters, Waltman and Snell, Albert M. Diseases of the Gallbladder and Bile Ducts. Philadelphia: W. B. Saunders Company, 1940.  
<sup>8</sup> Garland, L. H. and Brown, J. M. Roentgen Diagnosis of Spontaneous Internal Biliary Fistulas. Especially Those Involving the Common Duct. *Radiology* 38:134 (Feb) 1942.

a large quantity of pus was evacuated in which there were several gallstones varying in size from 1 mm to 1.5 cm in diameter. The gallbladder was firmly impacted with stones, was gangrenous and showed a perforated area about 3 cm in diameter. The gallbladder was opened widely and over 200 light yellow, faceted stones were removed. The gallbladder was then separated from its bed, beginning at the fundus, and removed. The cystic duct and the common bile duct were identified as solid fibrous cords. One large stone which was embedded in a fibrous cord representing the remains of the distal portion of the hepatic duct just proximal to the cystic duct and another large stone which was embedded in the fibrous cord representing the remains of the common duct just distal to the cystic duct were removed. The proximal portion of the hepatic duct was widely dilated and joined to the anterior wall of the stomach near its lesser curvature and about 6 cm proximal to the pylorus. This fistulous tract was opened, explored for stones, noted to have an opening into the stomach about 1.5 cm in diameter and then closed tightly with No. 80 cotton sutures. Sulfanilamide was sprinkled in the operative area, one soft rubber dam drain was left in the gallbladder bed and the abdomen was closed in layers with No. 50 interrupted cotton sutures. The patient received 1,000 cc of 5 per cent dextrose in isotonic solution of sodium chloride one hour before operation and 1,000 cc of blood plasma during the operation, which commenced at 12:05 a. m. and ended at 2:15 a. m. Water in quantities desired and tolerated was allowed as soon as the patient reacted from the anesthetic and the patient had an excellent postoperative course without distention or discomfort. The drain was removed on the tenth postoperative day and the patient was allowed out of bed on the twenty-first postoperative day. There was no external bile drainage, but a slight purulent drainage persisted for several weeks until a gallstone about 1 cm in diameter was extruded through the drain site in the incision.

An extract of the patient's clinical record when hospitalized in a Chicago hospital for appendectomy in May 1941 was obtained, confirming the date and the length of stay in the hospital as given in the history obtained from the patient. The diagnosis of the surgeon and the pathologist in this hospital was acute catarrhal appendicitis. Although the family of the patient visited him shortly after his recent operation, no history could be obtained from the mother or other members of the family of any illness that the patient had ever had other than the illnesses previously recorded in his past medical history. However, the patient, about two months after this recent operation, recalled one other instance, eight years ago, in which he had severe abdominal pain for several hours which caused him to leave a ball park and return to his home. For this pain, which he relates was more severe than that suffered with his attack of appendicitis and during his present illness, he received no hypodermic medication and the pain suddenly ceased the same day, after which he felt perfectly well.

Two months after operation a barium sulfate meal was given the patient and the fistulous tract to the stomach was demonstrated under the fluoroscope. An x-ray plate was made with the patient in a recumbent position (fig. 1) showing the partially barium filled fistulous tract. Figure 2 is a schematic illustration of the findings at operation.

SUMMARY

A case of spontaneous hepaticogastric biliary fistula, the first recorded in the literature, with symptoms vaguely suggestive of biliary tract disease of only thirty-four hours' duration, was observed. A gangrenous, perforated, gallbladder impacted with over 200 stones, complete fibrous obliteration of the cystic and common bile ducts and fibrous obliteration of the distal portion of the hepatic duct and general peritonitis were found at operation. Complete recovery of the patient followed surgical intervention, and roentgenographic demonstration of the hepaticogastric fistula was made two months after the operation.

Special Article

AMERICAN HEALTH RESORTS

THE IMPORTANCE OF HEALTH RESORTS  
AND THEIR FACILITIES IN MEDICAL  
PREPAREDNESS

MAJOR GENERAL CHARLES R. REYNOLDS  
UNITED STATES ARMY, RETIRED

*These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.*

The term health resort is loosely applied to several kinds of institutions quite unlike in their facilities and methods of promoting health as well as their importance in medical preparedness. This term includes hospitals or spas possessed of certain natural therapeutic facilities for the treatment of chronic diseases and in a sense, other institutions offering convenient, attractive and

TABLE 1—Spa Facilities According to States, Localities  
and Accommodations

Alabama	3	605	Montana	4	300
Arizona	2	110	Nevada	2	74
Arkansas	1	20,412	New Mexico	5	1,161
California	23	4,768	New York	6	10,142
Colorado	2	870	North Carolina	3	175
Florida	3	490	Oklahoma	2	1,030
Georgia	2	457	Oregon	3	350
Idaho	2	180	Pennsylvania	2	856
Illinois	1	75	South Dakota	1	435
Indiana	5	1,065	Tennessee	3	680
Iowa	1	110	Texas	3	1,088
Kentucky	1	165	Utah	1	10
Maine	1	640	Virginia	5	1,391
Michigan	3	2,755	West Virginia	4	1,511
Minnesota	2	165	Wisconsin	1	501
Mississippi	2	310	Wyoming	2	25
Missouri	2	2,084			
			33 states		101,074

healthful accommodations in an environment calculated to attract those needing rest and rehabilitation as well as those seeking athletics, sports or even social advantages. For military use we must include in this consideration hospitals and hotels some of which offer little more than sunshine, mountain air and sea breezes. These institutions have a potential military value for housing purposes during mobilization or for conversion into convalescent hospitals and camps as military operations progress. Many of the larger hotels as for instance those at Atlantic City are being acquired by the military services at the present time for the establishment of special schools, reception centers and so on. In general, these institutions fit into the military plans only because their physical facilities are readily available where and when needed and not because they are called health resorts.

The use of spas in this country for military purposes has been well considered by Dr. N. Philip Norman<sup>1</sup> and by several more recent surveys of these institutions.

<sup>1</sup> Norman, N. P. Mobilizing the Spas and Health Resorts of Our Nation. New York, M. J. 108: 419 (Sept. 7) 463 (Sept. 14) 507 (Sept. 21) 1918, published in book form by A. R. Elliot Publishing Company, 1918. Copyright 1918.

for military purposes being made by the Committee on Health Resorts of the American Medical Association, cited by Dr. Walter S. McClellan, medical director of the Saratoga Spa, in his articles.<sup>2</sup> From the latter source have been taken many data essential in estimating the value of health resorts in medical preparedness, more especially tables 1, 2, 3 and 4, which record the results of the survey by showing spa facilities and location, capacity and therapeutic value. Lists of institutions meeting somewhat the definition of health resorts which have been compiled by the Red Book of the American Hotel Association and by the Hotel Monthly have been consulted.

In table 1 are listed the facilities according to states with the total accommodation for each state having spa facilities. Table 2 shows the number of spas in various states classified according to accommodations. Table 3 lists the states with the greatest accommodations in institutions of 1,000 or more. Table 4 lists the spa facilities according to the several army corps areas.

From a study of these compilations it is found that spas of significant importance are found in one hundred and three localities in thirty-three states, which provide facilities for treating about 57,000 patients.

As to size, there are eleven states having facilities each of which is capable of caring for 1,000 or more patients. These constitute about 85 per cent of available facilities, the greatest concentration amounting to over 70 per cent of such institutions being found in Arkansas, New York and California. The others of varying sizes are located in Michigan, Missouri, Texas, Indiana, West Virginia, Virginia, New Mexico and Oklahoma, in approximately that order of importance. It will be seen that territorially their distribution does not coincide at this moment with the greatest concentration of troops, a definite scarcity of accommodations in this respect being noted in the Southeastern states of the Fourth Corps Area. In general, however, it will be seen that a sufficient number of spas of the larger size are fairly convenient for such military use as may be required.

There are a few very significant factors to be taken into consideration in determining the value of the spas for military medical purposes, chief among which is that many of these institutions do not house their patients, the immense majority of whom seek living accommodations in nearby hotels and boarding houses while undergoing treatment at the spa. Few of the spas or health resorts are professionally staffed but rely largely on the local profession for the care of the patients undergoing treatment. Some are not open the year round. There is no question about their ability to treat a very large number of patients at one time. For instance, New York State can care for 10,000, one-half of whom can be treated at the Saratoga Spa. However, practically none of the health resorts are staffed, administratively organized and possessed of sufficient housing, hospital facilities and utilities to function as general hospitals or as large special hospitals in the general scheme of military hospitalization, certainly not without remodeling and reorganization.

#### USE OF HEALTH RESORTS IN MEDICAL PREPAREDNESS

The use of health resorts in medical preparedness will be considered from the standpoint of the military forces and the civilian population.

To understand the situation regarding the use of special hospitals, such as spas or civilian hospitals in general, it is necessary to be acquainted with the general plans of hospitalization in the military establishment. It is now about eighty years since this nation was engaged in a war in which the theater of military operations was within the home boundaries. The present war, big as it is, does not give much indication that the theater of operations will be laid in the continental limits of the United States. At least military plans have not envisioned such a probability at the present time. This fact has had a determining influence on our system of hospitalization of military casualties, most of which

TABLE 2—Spa Facilities According to Number of Patients Who Can Be Accommodated

States	Number of Localities with Accommodations			
	Under 500	500-1 000	1 000-5 000	Over 5 000
Alabama	3			
Arizona	2			
Arkansas				1
California	21	1	1	
Colorado	1	1		
Florida	3			
Georgia	2			
Idaho	2			
Illinois	1			
Indiana	3	1	1	
Iowa	1			
Kentucky	1			
Maine		1		
Michigan	1		2	
Minnesota	2			
Mississippi	2			
Missouri	1		1	
Montana	4			
Nevada	2			
New Mexico	5			
New York	3		2	1
North Carolina	2			
Oklahoma	1	1		
Oregon	3			
Pennsylvania	1	1		
South Dakota	1			
Tennessee	3			
Texas	1	1	1	
Utah	1			
Virginia	4	1		
West Virginia	3		1	
Wisconsin		1		
Wyoming	2			
Total	83	9	9	2

are expected to come from the theaters of operations in foreign lands. Experience shows that the Army must operate its own hospitals whether in the zone of the interior (home country) or in the theater of operations, which includes the zone of communications or supply lines and the combat zone itself. It is true that during the Spanish American War civilian hospitals were used for military patients, but that situation was brought about by the almost total absence of military hospitals of a permanent or fixed type. The use of civilian hospitals for military patients will come only when military operations are carried on in our own country or the capacity of our military hospitals is overtaxed. During the first world war, before American military hospitals were ready for casualties it became necessary to evacuate some of the American sick and wounded to French institutions, a procedure that created the utmost confusion and was discontinued as soon as possible.

<sup>2</sup> McClellan, W. S. Role of Spas in Medical Preparedness. Arch. Phys. Therapy 22: 656 (Nov.) 1941. New York State J. Med. 42: 726 (April 15) 1942.

Another general principle is that military hospitals must be general hospitals in the sense that they shall receive all types of patients, sick or wounded. The only exceptions in time of peace to this plan are the Fitzsimons General Hospital at Denver for the treatment of tuberculous military patients and the Army and Navy Gen-

TABLE 3—States with Largest Accommodations

	Number of Localities	1,000 or Over
1 Arkansas	1	20,412
2 New York	6	10,146
3 California	23	4,768
4 Michigan	1	2,765
5 Missouri	2	2,084
6 Texas	3	1,988
7 Indiana	5	1,935
8 West Virginia	4	1,815
9 Virginia	5	1,403
10 New Mexico	5	1,161
11 Oklahoma	2	1,030
Total	59	49,608

eral Hospital at Hot Springs, Ark., which is operated by the Medical Department of the Army for the treatment of diseases for which the waters of that locality have an established reputation. Specialized hospitals have no place in the theater of operations except possibly some institutions for neuropsychiatric cases, the so-called shell shocked. Some of these were established fairly near the front for the purpose of keeping such patients away from the hospital atmosphere, which seems to grow on them and tends toward permanent demilitarization of this class of war casualties. Unless the principles of hospitalization in the present war are modified in a manner at variance with all past experiences and existing plans there will be no institutions for special treatment in the theater of operations, nor is the use of special hospitals contemplated anywhere except under military management. The purchase or lease by the Veterans Administration of existing spas or health resorts or the transfer of individual patients from Veterans Administration facilities has not been established as a policy at the present time. It is reasonable to expect that such a policy, if adopted, will operate after the war or during the later stages of a long war.

The present hospitalization program of the Army is similar to that which operated during the first world war. Near each concentration of troops there is provided a "station hospital" which might just as well be called a camp hospital for the troops in that immediate vicinity. The program calls for beds in station hospitals for 4 per cent of the military strength. They vary in capacity from 50 beds to several thousand and function under local commanders.

The general hospitals of the peacetime Army and Navy will continue to function as such on an expanded basis. Other general hospitals are being constructed throughout the country at strategic points. In the theaters of operations general hospitals will be provided by construction or otherwise to receive patients by transfer from station hospitals and through the established route in the evacuation of casualties via aid stations, clearing stations, surgical hospitals and evacuation hospitals. The allowance of general hospital beds in the zone of the interior will be approximately 1 per cent of the total strength of the Army. A much higher

allowance of beds will be made in the theaters of operations. The requirement of fixed hospital beds in the American Expeditionary Forces in 1918 was 15 per cent of the forces engaged. General hospitals in the United States are under the supervision of the Surgeon General. They are general hospitals in every sense of the word, receiving and caring for the military sick and wounded of all kinds and conditions. Classification and consequent separation of patients is, of course, carried on in each large hospital, and when the situation calls for it several general hospitals may be grouped largely for administrative reasons, one hospital being designated for the sick, another for surgical cases or fractures and so on until there is developed a "hospital center" of more or less specialized units. Patients remain in these hospitals until returned to duty, discharged, transferred to the Army and Navy General Hospital or the Fitzsimons General Hospital or discharged and admitted to the facilities of the Veterans Administration.

For military purposes there are three ways by which health resorts, more particularly spas, can be of value:

- 1 By the acquisition by purchase or lease of these plants by the War or Navy Department for general hospital purposes after the necessary remodeling and additions.
- 2 By the transfer of individual military patients for special treatment under the direction of personnel now operating the spas.
- 3 By the operation of these institutions essentially as spas under military control. Their use as convalescent hospitals should be considered in this respect.

The acquisition by the Army and Navy of spas and health resorts and their development into military hospitals for the treatment of all classes of patients will be determined by their availability and the requirements of the service balanced against the advantages of new construction. Some of the larger spas and health

TABLE 4—Spa Facilities According to Army Corps Areas (Army Service Commands)

	Army Corps Area	Number of Accommodations	Localities
First	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut	1	610
Second	New York, New Jersey, Delaware	6	10,146
Third	Pennsylvania, Virginia, Maryland, District of Columbia	7	2,348
Fourth	South Carolina, Tennessee, Louisiana, North Carolina, Alabama, Georgia, Mississippi, Florida	10	2,717
Fifth	Ohio, West Virginia, Indiana, Kentucky	10	3,930
Sixth	Michigan, Illinois, Wisconsin	5	3,425
Seventh	North Dakota, South Dakota, Nebraska, Minnesota, Kansas, Iowa, Arkansas, Missouri, Wyoming	9	23,471
Eighth	Colorado, Arizona, New Mexico, Oklahoma, Texas	14	5,123
Ninth	Washington, Montana, Oregon, Nevada, Utah, California, Idaho	30	5,652
Total		103	57,491

resorts have been transferred to the jurisdiction of the War Department, reorganized on a general hospital basis and administered by the Medical Department of the Army. The large institutions at Battle Creek, Mich., Palm Springs, Calif., and White Sulphur Springs, W. Va., have been acquired by the Army Medical Department, and others are contemplated. It simply means that these institutions are being acquired in



carrying out the hospitalization program of the Army. Their hydrotherapeutic facilities will become a valuable feature of physical therapy for medical and surgical cases which is a fairly well developed service in the larger hospitals of the Army though not in a way comparable with that afforded by the facilities of the spas.

TABLE 5—*Chronic Diseases Treated at Spas*

Heart and circulatory disorders	31 per cent
Rheumatic condition*	21 per cent
Gastrointestinal ailments	18 per cent
Nervous condition—functional and organic	8 per cent
Metabolic diseases	4 per cent
Skin diseases (noninfectious)	2 per cent
Miscellaneous	7 per cent
No illness chiefly general debility	10 per cent

The transfer of militarized patients to existing spas for special treatment is confronted by administrative difficulties. Few of these institutions are staffed, administratively organized and possessed of sufficient housing, hospital facilities and utilities to function in the general scheme of military hospitalization. Then there is the objection that military control of patients transferred to civilian institutions is lost with inevitable confusion. It would seem to be better administration and would accomplish the purposes desired if, before discharge or general demobilization patients for whom spa treatment is indicated were to be sent to those military hospitals which have been established on the sites of the larger health resorts.

The third proposition, the operation of spas under military control, meaning by this the supplementing of these institutions by military personnel and facilities to care for military patients, is to be thought of when the hydrotherapy and physical therapy facilities of the large spas already absorbed in the hospitalization program are exhausted. Their use as convalescent hospitals or camps as a start in a program of rehabilitation either by the military medical services or by the Veterans Administration is to be considered. After demobilization we may look for the closing of many general hospitals. At that time these reinforced spas, acting as convalescent hospitals, may be the answer to the problem of the follow-up treatment of the cardiovascular, digestive and rheumatic casualties of the war and the start of a program of health conservation and rehabilitation.

#### SPA THERAPY AND ITS USE IN THE TREATMENT OF CHRONIC WAR CASUALTIES

The therapeutic value of spa treatment needs no defense. It is an established feature of medical treatment based on ages of experience. As is well known this treatment is featured according to the physical and chemical characteristics of the natural agents peculiar to the locality, varying as they do in thermal qualities and chemical content, such as the sulfur, brine and carbon dioxide waters. Closely associated with hydrotherapy is physical therapy, including its usual adjuncts of heat, light, electricity and the important matter of regulating diet, rest and exercise.

The diseases for the treatment of which these institutions have an established reputation are essentially chronic and may be listed as in table 5, based on the records of treatment of over 6,000 patients in one year at the Saratoga Spa.

Probably three fourths of those under treatment at spas are cardiovascular, rheumatic and gastrointestinal patients. These three groups accounted for a considerable proportion of admissions to sick report in the Army from April 1, 1917 to Dec 31, 1919, as shown in table 6.

From the military standpoint it is important to note that these are type disabilities which are usually discharged from the military service and whose after-care becomes the responsibility of the U. S. Soldiers Home or the Veterans Administration. This is particularly true in time of war, when available beds must be used for war casualties who may become military assets instead of liabilities. Even so, we should give consideration to the prevention of permanent disability during the incipient stage of these ailments whether functional or organic when treatment will be most beneficial. Discharged from military service, they face the realities of a rather complete readjustment with urges and necessities which place material interests above physical rehabilitation. These three groups accounted for more than 360,000 admissions in the Army during the first world war. If the mobilization of manpower is to be doubled during the present war there may be three quarters of a million in this reservoir of potential chronic cases.

The digestive diseases were the most important of these groups and accounted for about 9 per cent of admissions. It is estimated that they will furnish 10 per cent of admissions during the present war and on this estimate specialists in gastroenterology have been provided for in our general and large station hospitals. In reviewing the records of the first world war relating to digestive diseases, Kantor<sup>3</sup> attempts to estimate the permanent disability from this cause in soldiers based on Veterans Administration records and shows that whereas these diseases occurred among soldiers of the first world war to the extent of 9.2 per cent and among the disabled veterans to the extent of 3.5 to 4 per cent as late as 1940 "these figures might represent the residue of chronic or permanent disability resulting from the original acute wartime incidence of gastrointestinal disease." Conceding a large margin of error in this calculation, it must be evident that these diseases swell the steadily growing total of chronic ailments to which the attention of medicine is being directed more and more year by year. Cardiovascular conditions are more easily detected at the recruit examinations than digestive diseases. The functional nature and origin of many of these suggest the benefits to be expected of spa treat-

TABLE 6—*Patients with Three Diseases*

Digestive diseases excluding appendicitis and diseases of the mouth	264,611
Cardiovascular diseases excluding hemorrhoids, varicose veins and lymphatic diseases	54,481
Rheumatic diseases not so classified in reports but including 32,304 arthritis and 11,325 muscular rheumatism	43,532

ment—physical medical treatment in general. I have in mind neurocirculatory asthenia, the D. A. H. (disordered action of the heart) cases early recognized by the British in the previous war. Appropriate management would rescue some of these men for military service from invalidism and its huge pension rolls. It is

<sup>3</sup> Kantor, John L. Digestive Disease and Military Service. J. A. M. A. 120: 254 (Sept. 26) 1942.

known that the British and Germans are making use of their spas for military personnel as the French did some time ago.

The ill defined group called rheumatic, accounting for so much disability that statistical analysis is unnecessary and from which military service affords no immunity, rounds out a list of ailments for which spas were created. The usual case finding crusades are not necessary as in certain other diseases, they are "gathered," as it were, rather than discovered and in numbers which justify spa treatment in a way consistent with the general principle of military hospitalization. The best method would seem to be the employment of the existing facilities of the spas taken over by the federal medical services for general hospitals and by maintaining and supplementing such other health resorts as may be needed for use as convalescent hospitals and by a working arrangement between certain health resorts of the spa type with the Veterans Administration for the care of war veterans after discharge.

#### THE USE OF SPAS AND HEALTH RESORTS FOR THE CIVILIAN POPULATION IN THE PRESENT EMERGENCY

The use of spas and health resorts for the civilian population in the present emergency is a subject entirely distinct from their use for purely military purposes. As specialized institutions they offer facilities for the treatment of many conditions arising out of service in war industry and, on account of the scarcity of hospital facilities in over-crowded production areas, these institutions might well be developed into a valuable asset in the field of industrial medicine and hygiene. With the increasing scarcity of physicians for civilian service and of hospital facilities, the value of the spa is enhanced because of its ability to give appropriate treatment to many without additional facilities.

Many of the conditions so prevalent among workers, especially in heavy industries, are greatly benefited by spa treatment, and the same is true of those which partially immobilize at least periodically a large part of our population however employed. With the great advances made by preventive medicine, particularly in overcoming the infectious diseases, life expectancy has been prolonged and a greater proportion of the population is year by year arriving at the higher age brackets. The infections are gradually giving way to structural or degenerative changes and consequent chronic ailments. As a result, we have with us a steadily increasing proportion of cardiovascular cases and many more in that vast field referred to as rheumatic. It is the chronic degenerative diseases which are plaguing the later years of our lives and which present the most absorbing problem of the medical profession. The treatment of these cases is largely a feature of physical medicine, and in this field the therapy of the spa is predominant in the prevention and control of these conditions which, if unchecked, lead on to invalidism.

#### SUMMARY

1 The importance of health resorts in medical preparedness must be considered in connection with the military situation, the hospitalization plan and the policy governing the disposition of noneffectives during and after active military operations.

2 The so-called health resorts without substantial natural therapeutic agents and facilities are of value in medical preparedness only as their physical plants or

utilities are available when and where needed to supplement the military housing program. Some of these have been useful already as station or local hospitals. Others will prove valuable as military expansion proceeds.

3 The chief duty of the military medical service is the conservation of effective manpower for the purpose immediately in view. Military operations are complex under all circumstances, the medical service itself, in arranging its hospitalization, must adjust itself to the organization, distribution and operation of the troops it serves. Experience has shown that the establishment of special hospitals is unsound, as is the retention of noneffectives in the military service. Hence in the early stages of any war the development of special hospitals will not be in order.

4 The value of many of the existing spas for military medical purposes is decidedly influenced by their lack of housing facilities for patients, permanent professional staffs, administrative machinery and other facilities for handling groups of men commensurate with their special treatment facilities.

5 The most extensive employment of spas in medical preparedness will likely be through their acquisition by the Medical Department of the Army or Navy for use as general hospitals with such additions as may be necessary. Their therapeutic appurtenances will be valuable in supplementing the physical therapy department which has become a recognized and necessary service at every large military hospital. Added to this will be, of course, the special program utilizing the natural therapeutic agents of the spas. Through the growth of the military establishment commensurate with the seriousness of present world conditions the Medical Department of the Army may well find it expedient to designate general hospitals with spa facilities for treatment of certain chronic diseases before discharge or demobilization, as was done to a limited extent during and after the first world war when the empyemas, fractures, osteomyelitis cases and amputations were concentrated in designated general hospitals.

6 The distribution among spas of individual convalescent patients for special treatment of conditions many of which are chronic and disabling for the military service, is objectionable for administrative reasons, especially as it severs their contact with the military establishment.

7 Consideration should also be given to some of the strategically located health resorts for use as convalescent hospitals or camps after supplementing them with military personnel and utilities.

8 The disease groups for which spa treatment is especially efficacious—digestive, cardiovascular and rheumatic, comprise a large percentage of admissions to sick report in the Army—more than 360,000 from April 1, 1917 to Dec. 31, 1919, many of which became chronic with resulting invalidism.

9 Spas have a decided value in supplementing the medical service of the civilian population, especially the added requirement incident to war industry. Many of the workers in this group of the population are beyond the military age limit and therefore present those chronic ailments which are becoming more prevalent in the general population year to year and which should be recognized as a real public health problem.

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION  
OF THE FOLLOWING REPORT

HOWARD A. CARTER, Secretary

### SONOTONE AUDICLES #530, #531, #533 ACCEPTABLE

Manufacturer Sonotone Corporation Elmsford, N. Y.

The three models of the Sonotone Audicles were investigated by the Council and are treated individually in the following report:

#### SONOTONE AUDICLE #530

The Sonotone Audicle #530 consists of a microphone and vacuum tube amplifier combined in a molded case  $3\frac{3}{4}$  inches by  $1\frac{1}{4}$  inches by  $\frac{3}{4}$  inch, weighing 3.46 ounces and air receiver  $\frac{1}{4}$  inch thick by 1 inch diameter. Three B battery units were submitted with the instrument.

**Current Data**—Battery voltages and current drains with the hearing aids turned full on were measured as follows:

A Battery	Voltage	Current
x-801	1.5 volts	85.88 milliamperes
x-800	1.5 volts	86 milliamperes
B Battery	Voltage	Current
918	18 volts	0.48 milliamperes
930	30 volts	0.840.96 milliamperes
945	45 volts	1.41.70 milliamperes

**Acoustical Gain**—The instrument has a single switch for on-and-off volume control. Set at full volume, the acoustical gains shown were as follows:

B Voltage	128	256	512 2 048	3 072	4 096
18 volts	Nil	Nil	12.30 db	21 db	8 db
30 volts	Nil	Nil	14.39 db	23 db	10 db
45 volts	Nil	Nil	14.50 db	30 db	12 db

The foregoing measurements are for pure tones at normal ear threshold levels. At 50 decibels above threshold the gain at 512 cycles per second is about 10 decibels higher, but the output shows harmonic distortion at this frequency. Whispered voice was heard and understood at a distance of 5 feet by a hard of hearing subject, with an average hearing loss of 45 decibels in the speech range.

**Articulation**—Articulation tests with hard of hearing subjects, with the volume set for comfortable loudness showed satisfactory performance.

The instrument is well made throughout.

#### SONOTONE AUDICLE #531

The Sonotone Audicle #531 consists of a microphone and amplifier unit, combined in a molded case  $4\frac{1}{8}$  by  $2\frac{1}{8}$  by  $\frac{7}{8}$  inches, weight 4.8 ounces, a magnetic receiver  $\frac{9}{10}$  inch thick by  $\frac{3}{4}$  inch diameter, weight without molded earpiece 9.32 ounces and a bone receiver  $1\frac{3}{10}$  by  $1\frac{1}{10}$  by  $\frac{3}{10}$  inches, weight 0.56 ounces. Three B battery units 18 volt, 30 volt and 45 volt were furnished, each complete with a 1.5 volt A battery as described in the report on the Sonotone Audicle #530.

**Current Data**—Current drains on the 1.5 volt A battery was approximately 85 milliamperes for each of the three B battery units. The B battery currents shown are:

18 volts	0.80 milliamperes
30 volts	1.01.12 milliamperes
45 volts	1.62.20 milliamperes

**Acoustical Gain**—In addition to the volume control there is a tone control consisting of a screw with four tone settings. The effect of shifting the tone control from 1 to 4 was to increase the amplification for the frequencies up to 2,048 cycles and to decrease it over the range from 2,048 to 4,096. The following are the approximate acoustical gains at full volume for different instrument settings and B battery voltages:

B Battery		128	256	512 2 048	3 072	4 096
Vol- tages	Tone Control					
18	1	Nil	Nil	18.39 db	4.2 db	
18	2	Nil	12 db	25.52 db	Nil	
45	1	Nil	10 db	21.47 db	17.5 db	
45	2	Nil	20 db	33.53 db	8.0 db	

**Articulation**—Tests using syllable and sentences with a hard of hearing subject showed satisfactory performance. Whispered voice was heard and understood at 8 feet in a quiet room by a hard of hearing subject with an average hearing loss of 45 decibels.

The instrument is well made.

#### SONOTONE AUDICLE #533

The Sonotone Audicle #533 is similar in external respects to the Sonotone #531. The combined microphone and amplifier unit has three controls—a separate on and off switch, a volume control and a "tone discriminator." It also has connection for a magnetic receiver and a separate connection for a crystal receiver. The microphone and amplifier unit are combined in a molded case 5 by  $2\frac{3}{4}$  by  $\frac{7}{4}$  inches, weight 6.0 ounces. The magnetic receiver and the bone conduction receiver were the same as for Sonotone #531. Only the magnetic receiver was supplied with the instrument.

**Current Data**—Battery units were supplied showing voltages and current drains at full volume as follows:

A Battery	Voltage	Current
x-803	1.5	75 milliamperes
x-800	1.5	75 milliamperes
B Battery	Voltage	Current
930	30	85 milliamperes
945	45	1.2 milliamperes

**Acoustical Gain**—Measurements of acoustical gain, with input at normal ear threshold, were made using the 30 volt B battery at full volume and at different tone settings, with the following results:

Tone Setting	128	256	512 2 048 Min Max	3 072	4 096
1	Nil	Nil	5 db 42 db	28 db	11 db
3	Nil	Nil	24 db 45 db	30 db	12 db
6	Nil	5 db	31 db 45 db	25 db	9 db

The effect of the "tone discriminator" is to vary the low frequency response relative to the response at high frequencies. The internal noise is not excessive. It was found that, with the 45 volt battery and with both volume and tone control set at maximum, there was a squeal due to feedback. This was eliminated, however, when either control was set slightly below maximum.

**Articulation Tests**—The usual tests with hard of hearing subjects were made and showed satisfactory performance.

The instrument is well made throughout.

The Council voted to accept the Sonotone Audicles #530, #531, #533 for inclusion in its list of accepted devices.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CON-  
FORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY  
OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND  
NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL  
BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

**EPHEDRINE SULFATE** (See New and Nonofficial Remedies 1943, p. 256)

The following dosage forms have been accepted:

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Solution Ephedrine Sulfate, 3 per Cent 1 fluidounce bottle Preserved with 0.5 per cent chlorobutanol

Capsules Ephedrine Sulfate 25 mg and 50 mg

**EPHEDRINE HYDROCHLORIDE** (See New and Nonofficial Remedies, 1943, p. 255)

The following dosage forms have been accepted:

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Solution Ephedrine Hydrochloride, 3 per Cent 1 fluid-ounce bottle Preserved with 0.5 per cent chlorobutanol

Capsules Ephedrine Hydrochloride 25 mg and 50 mg

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 27, 1943

## THE INFLUENCE OF THE ENDOCRINE GLANDS ON GROWTH AND AGING OF THE SKELETON

Since disturbances of body growth are not infrequently associated with endocrine disorders, attempts have been made to establish the role of the ductless glands in the maintenance of normal and in the initiation of pathologic skeletal development. The tendency is to consider the anterior hypophysis as the master gland controlling skeletal growth by a single specific growth hormone. Other endocrines are thought by many to affect growth only by acting first on the hypophysis.<sup>1</sup> More recent anthropologic and comparative anatomic observations, however, indicate that skeletal development is primarily genetically determined, although it may be modified by the secretions of ductless glands.<sup>2</sup> Moreover, hormones may influence not only skeletal growth but also skeletal aging, and often the aging effect outbalances the growth promoting.<sup>3</sup>

Histologically there are three phases of skeletal growth and aging, the first characterized by growth of cartilage, the second showing increasing regression of cartilage and maturation of bone, the third exhibiting a predominance of resorption of cartilage and bone. The duration and degree of these phases vary in different species and strains. In the joints of aging mice spontaneous degenerative changes occur, which are more severe and more frequent in rapidly aging strains.<sup>4</sup> Administration or withdrawal of hormones may affect one or all three developmental phases. In growing animals, anterior hypophyseal hormone, prolactin, thy-

roid hormone, potassium iodide and, in the hypogonadal male, also testosterone may temporarily intensify body growth.<sup>5</sup> Gigantism, however, does not result, since growth ceases prematurely, while the onset and progress of the subsequent phases of aging are accelerated. Under certain conditions the age changes may be so hastened that they outbalance the growth stimulation, and stunting results. Estrogens and androgens inhibit growth and intensify aging of the epiphyseal cartilage and may thus cause dwarfing. The effects of estrogen are, however, more complex, since it inhibits the resorption of bone and, in some species and strains, increases endosteal bone formation.<sup>6</sup> Skeletal aging is delayed subsequent to thyroidectomy, to castration and to administration of progesterone, but this retardation is compensated at later stages by a more rapid progress of the age changes, and there ensues no skeletal overgrowth.

In animals that have definitely ceased to grow, growth promoting substances do not revive the proliferation of the inactive epiphyseal cartilage, but they may accelerate and intensify the processes of skeletal aging, thus, anterior hypophyseal hormone increases the incidence and severity and hastens the onset of the articular age changes, and estrogen may call forth osteoporotic lesions.<sup>7</sup> Besides the age of the animal, its sex, the dose of the hormone, the duration of the treatment and seasonal influences modify the hormonal effects on the skeleton.<sup>8</sup> Hormones of different nature produce similar histologic changes in the skeletal tissues.

The specificity of hormonal effects on the skeleton seems to be restricted, and quantitative rather than absolute. Moreover, it seems doubtful whether the term "growth hormone" should be applied to a substance that promotes not only growth but also the opposite, namely the regressive changes of aging. Since growth is the result of a variety of complex biochemical processes, it seems improbable that a single growth hormone could promote all of them and even in a limited way be specific in nature. Anterior hypophyseal hormone, however, increases the retention of nitrogen and the storage of water and fat in the tissues.<sup>9</sup> Therefore the anterior hypophysis and also other endocrines affect growth by participating in the metabolism of the products needed by the organism for its growth as determined and limited by the genetic constitution of the individual. Presumably a number of hormones cooperate also in the metabolic activities that bring about skeletal aging.

1 Evans, H. M. Growth Hormone of the Anterior Lobe of the Pituitary Gland. *J. A. M. A.* 117: 287 (July 26) 1941.

2 Greulich, W. W. Genic and Endocrine Determination of Skeletal Development. *Endocrinology* 30: 1023 (June) 1942. Smith, P. E., and MacDowell, E. C. An Hereditary Anterior Pituitary Deficiency in the Mouse. *Anat. Rec.* 46: 249 (Aug. 25) 1930. Dawson, A. B. The Influence of Hereditary Dwarfism on the Differentiation of the Skeleton of the Mouse. *ibid.* 61: 485 (March 25) 1934. Silberberg.<sup>4</sup>

3 Silberberg, Martin, and Silberberg, Ruth. Effects of Endocrines on Age Changes in the Epiphyseal and Articular Cartilages. *Endocrinology* 31: 410 (Oct.) 1942. The Influence of the Endocrine Glands on Growth and Aging of the Skeleton. *Arch. Path.* to be published.

4 Silberberg, Martin, and Silberberg, Ruth. Age Changes of Bones and Joints in Various Strains of Mice. *Amer. J. Anat.* 68: 69 (Jan) 1941.

5 Silberberg.<sup>3</sup> Riddle.<sup>7</sup>

6 Gardner, W. U., and Peiffer, C. A. Influence of Estrogens and Androgens on the Skeletal System. *Physiol. Rev.* 23: 139 (April) 1943.

7 Riddle, Oscar. Contemplating Hormones. *Endocrinology* 10: 1 (Jan. Feb.) 1935.

8 McLean, F. C. Physiology of Bone. *Ann. Rev. Physiol.* 5: 79, 1943.

9 Long, C. N. H. Metabolic Functions of Endocrine Glands. *Ann. Rev. Physiol.* 4: 465 1942.

RECENT DATA ON TRICHINAE IN  
NECROPSY MATERIAL

During the past several years a survey of trichina infection in necropsy material obtained from hospitals throughout the United States has been conducted in the laboratories of the United States Public Health Service. A recently published summary<sup>1</sup> of the general results provides a wealth of data on some aspects of the trichinosis problem in this country. Examination of the muscle of diaphragms with the aid of the dissecting microscope or with the help of the Baermann apparatus after enzymatic digestion revealed that 1 in 6 of the more than 5,000 specimens studied was positive for *Trichinella spiralis*. The sampling of the necropsy material employed in this investigation was such that the results provide a reasonably accurate index for the entire country. The residences of persons represented in the survey included forty-one states and the District of Columbia, both urban and rural. Necropsy material from people in states in which clinical trichinosis had not been reported at the time this survey was inaugurated, material from persons who died suddenly from natural or traumatic causes and material selected at random from hospitals selected at random were all included. There were no statistically significant differences in the percentage of positives in the various states or in the urban and rural groups. With the view of demonstrating the degree of protection afforded by the Mosaic code, samples from 200 orthodox and unorthodox Jews were included in the survey. Of this number only 1 was positive. All the material in this short series was from New York City, possibly a higher percentage of positives might have been obtained if necropsy material from Jewish people throughout the country had been examined. Nevertheless the present data clearly demonstrate the protection afforded by adherence to the Mosaic code.

With regard to the degree of infection, approximately 86 per cent of the total number of infected specimens contained less than 11 larvae per gram. Four and five-tenths per cent of the positive cases showed infections of more than 50 per gram, a number which Wright and his associates<sup>1</sup> believe capable of causing pronounced clinical symptoms. An appraisal of a number of cases in which both live and dead larvae were encountered indicated beyond reasonable doubt that in some instances a superimposed infection had occurred. This corroborates the similar results of others<sup>2</sup> and emphasizes that the observations on the resistance to reinfection with trichina exhibited by rats<sup>3</sup> does not warrant belief that the same phenomenon applies to man.

Wright and his collaborators decry any attempts to minimize the significance of trichinosis as a public health problem on the basis of statements that a clinical history of the disease may not have been reported in cases in which the parasite was found at necropsy. Such assertions do not refute the possibility that heavily infected people may have had clinical trichinosis during their lifetime without the disease having been recognized. Indeed, there is little doubt, according to Wright and his co-workers, that not all cases of trichinosis are diagnosed either clinically or anatomically. In any event the present survey, like previous less extensive studies, indicates that infection with trichina is widespread in this country. This is a problem which is of interest to all who are concerned with public health. Regrettable shortcomings in our control of trichinosis in the past have already been pointed out.<sup>4</sup>

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Current Comment

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HOPE (FALSE) FOR THE VICTIMS  
OF ARTHRITIS

Under Correspondence in this issue of THE JOURNAL appears a letter from Dr. Ralph H. Boots, New York, relative to an article in the *Reader's Digest* for November titled "Hope for the Victims of Arthritis." In 1937 the Council on Pharmacy and Chemistry of the American Medical Association indicated that a product called Ertron, which is a capsule containing some 50,000 U. S. P. units of vitamin D, was not acceptable for New and Nonofficial Remedies. The flamboyant advertising then used for the product was condemned. The Council also said that there was no proof that such large doses of vitamin D are not toxic and it concluded "Critical examination of the reports on the value of vitamin D in the treatment of chronic arthritis reveals little to warrant the belief that the beneficial effects claimed are specific." In the years that have passed, other discussions of the use of massive doses of vitamin D in the treatment of arthritis have been published, including a symposium on the subject before the American Rheumatism Association in June 1942 and a paper by Dr. R. H. Freyberg of the University of Michigan in THE JOURNAL.<sup>1</sup> Dr. Freyberg found the results of the use of such preparations unimpressive. The consensus of the symposium before the American Rheumatism Association was likewise far more negative than favorable to the use of this preparation. In New and Nonofficial Remedies, 1943, the Council summarized the evidence available to the date of publication in the following sentence: "Clinical evidence does not warrant the claim that massive doses of vitamin D are of

1 Wright, W. H., Kerr, K. B. and Jacobs, Leon. Studies on Trichinosis. XV. Summary of the Findings of *Trichinella Spiralis* in a Random Sampling and Other Samplings of the Population of the United States. Pub. Health Rep. 58:1293 (Aug. 27) 1943.

2 Most, Harry and Helsen, Milton. The Incidence of Trichinosis in New York City. Am. J. Hyg. 202:251 (Aug.) 1941.

3 McCoy, O. R. Immunity of Rats to Reinfection with *Trichinella Spiralis*. Am. J. Hyg. 14:484 (Sept.) 1931.

4 Garbage Disposal and Trichinosis editorial. J. A. M. A. 115:938 (Sept. 14) 1940.

1 Freyberg, R. H. Treatment of Arthritis with Vitamin and Endocrine Preparations. Emphasis of Their Limited Value. J. A. M. A. 119:1165 (Aug. 8) 1942.



benefit in chronic arthritis " Nevertheless de Kruif in an article in the *Reader's Digest* for November conveys to its readers his extraordinary enthusiasm regarding this technique Apparently the article stimulated hundreds of persons with arthritis to approach their physicians and to request a change from the methods of treatment which were being followed to the use of such preparations Many of these physicians report that they have received from one hundred to three hundred requests either directly or in writing Those who attempt education of the public in matters of health and disease have a serious responsibility, they do incalculable harm when they mislead the public

#### PENICILLIUM INOCULATED SURGICAL DRESSINGS

Since purified penicillin is not generally available for civilian use, attempts have been made to find a substitute One suggestion is the use of moist penicillium inoculated surgical dressings which have been tested clinically by Robinson and Wallace<sup>1</sup> of the Allegheny General Hospital In the preparation of such dressings, eight layers of gauze were placed in a Petri dish and saturated with a medium containing 1 per cent yeast extract, 2 per cent dextrose, 2 per cent corn starch and 2 per cent glycerin The dish was then autoclaved, inoculated with penicillium and incubated at room temperature Two days later, 1 cc of sterile human plasma was allowed to flush underneath the dressing to simulate its application to an open wound At intervals the Petri dish was tipped so that a small amount of fluid would drain away Titration of this fluid showed a rapid production of penicillin in the gauze culture The maximum titer was reached by the end of six days, at which time the drainage fluid inhibited growth of test strains of *Staphylococcus aureus* in dilutions as high as 1:200 The titer decreased rapidly after the seventh day Clinical tests of such penicillium gauze dressings were made on a number of patients A typical case was one of acute osteomyelitis and periostitis of the right humerus A previous wide incision had been made over the site of the infection and sulfonamides prescribed without relief A moist penicillium gauze dressing was placed over the wound, with prompt relief of pain In ten days the patient was discharged clinically well Another patient was treated for a large staphylococcal furuncle on the back of the neck and a third for multiple soft tissue *Staphylococcus aureus* abscesses over the lower back and sacral region with equally favorable results From these and other clinical data the Pittsburgh surgeons conclude that penicillium inoculated surgical dressings are of promise in the treatment of acute and chronic pyogenic surface infections Their use is recommended merely as an emergency measure until adequate supplies of purified penicillin are generally available Whether or not there are toxic or allergic reactions that might limit the use of such dressings has not yet been reported

#### MEDICAL SERVICE IN SOUTH AFRICA

The reorganization of medical service has been discussed in South Africa for several years During the last three years this discussion has increased in intensity Several reports have been made by the Planning Committee of the South African Medical Association The publication of the first report,<sup>1</sup> two years ago, was followed by an elaborate questionnaire to all the members of the association requesting expression of opinion on almost every phase of the proposed plan The planning committee then studied these replies and prepared a report and plan in accordance with the majority of opinions in the questionnaire<sup>2</sup> As a preliminary statement of principles the committee pointed out that more "doctoring" is in itself no solution of the health problem of the country Freedom from want and poverty will do more to build up a healthy community than any amount of curative medical services The committee found that "there was an overwhelming majority against a scheme operated as part of the civil service and run on civil service or army lines" Instead of a civil service system the committee proposed "a health service under the minister of health, with an elected council including professional representatives, having executive as well as advisory powers" The whole plan depends on a "parallelism" with administrative matters under the control of government authority and all medical matters under medical control and supervision It is proposed that the National Health Advisory Council which is to have considerable executive power, should have 28 members, 9 to represent governmental departments, 3 the public and 16 the professional medical associations, including physicians, dentists, nurses, pharmacists and medical technicians This type of organization is to be extended into regional divisions that have about 500,000 population and at least one "grade A" general hospital of about 1,000 beds and such other specialist and auxiliary hospitals as might be found necessary Certain health and protective service should be conducted in health centers "So far as curative services are concerned, the bulk of the work should, in our opinion still continue to be carried out by the general practitioner"

#### VOLUNTEERS FOR MALARIA TEST AWARDED LEGION OF MERIT

Fifty enlisted men volunteered to expose themselves to malarial infection for a period of six weeks in the jungles of New Guinea This was to demonstrate the danger of malaria for those not taking preventive measures A similar group was given atabrine as a malarial suppressive, while a third group used a drug the efficacy of which has not yet been fully disclosed As a result of this action "beyond the call of duty" the men have been awarded the Legion of Merit The action of these men is in the best traditions of the Army as exemplified by a similar group of volunteers in the famous experiments under Major Walter Reed, which contributed so much to the conquest of yellow fever

<sup>1</sup> Memorandum from the Planning Committee, South African M J 16 261 (July 25) 1942

<sup>2</sup> The Future of Medicine South African M J 17 199 (July 19) 1943

# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## ARMY

### MANAGEMENT OF POLIOMYELITIS

The War Department, Washington D C recently released Circular Letter No 175, regarding the management of poliomyelitis, which is as follows:

#### 1 GENERAL

1 a The sudden onset and obscure source of poliomyelitis, the uncertainty of effective preventive measures, the lack of specific therapeutic agents and the frequently distressing residuals or occasional deaths among those attacked have established a special dread of the disease among the general public and the medical profession alike. As a medicomilitary problem poliomyelitis has not been proportional to the public interest in and concern for it. However, although it is a relatively rare disease in the Army, it presents certain special problems of management.

b The principles of therapy which follow were formulated after conference with a group of recognized authorities on the different aspects of poliomyelitis. These principles are stated here in the belief that they include the most acceptable of the therapeutic procedures currently advocated. It should be emphasized that the information is intended to serve only as a guide and is not an effort to standardize the treatment of poliomyelitis in the Army. Perhaps no other disease calls for more individualization of therapy.

#### 2 TREATMENT

2 With respect to therapy, poliomyelitis may be said to present four phases: acute, subacute, convalescent and chronic.

a. *Acute Phase*—(1) *Definition* The acute phase includes the onset, which is characterized by malaise, nausea, vomiting, diarrhea and fever either singly or in combination. There are usually pain and tenderness and often stiffness in the muscles of the extremities or back. The degree of general systemic illness varies greatly, it is often severe. Paralysis of varying degree and extent characteristically appears in the second twenty-four hours of this phase, although it may not occur for several days. The disease may even terminate abruptly without the appearance of paralysis. The acute phase of poliomyelitis usually runs a self-limited course of three to seven days.

(2) *Management* (a) *Transportation* As a rule patients should be treated during this phase in the hospital where they are first seen. They are either too sick to move or only moderately ill, in which case they will survive the acute phase without special facilities. If special equipment is necessary it should be transported to the patient by the most expeditious means available.

(b) *Isolation Precautions* Standard measures for the management of communicable disease in hospitals will be applied as prescribed in Army Regulations (AR 40-210, paragraph 34a and section II IV and V). These include isolation by individuals or groups, control of visitors, protection of attendants, destruction or disinfection of secretions and discharges, adequate cleansing and disinfection of contaminated articles, and other medical aseptic technique appropriate for hospital management of communicable respiratory and intestinal diseases.

(c) *General Measures* Rest, support and symptomatic relief are the important aims of therapy during this period. Absolute bed rest is essential. A nutritious, easily digestible diet, adequate in or supplemented by vitamins, should be maintained when it is tolerated, and the adequacy of fluid intake should be assured. Careful attention to the functions of the kidneys and bowels is especially important for these patients, since paralysis of the bladder may demand catheterization and constipation may need occasional relief with enemas or mild laxatives. Sedation is usually effective in allaying the anxiety, apprehension, irritability and nervousness frequently encountered during this period. Sympathetic and tactful attention to the psychologic aspect of the patient's illness is of utmost therapeutic importance, both during the period when he is acutely ill and the long weeks or months before he reaches his maximum improvement. Medical officers, nurses and their assistants must constantly bear this feature of the illness in mind. Part or all of these general measures will be found extremely important through all the phases of poliomyelitis.

(d) *Local Measures* Careful nursing attention must be provided to maintain the affected parts of the body in the most desirable physiologic position, with the least discomfort to the patient. Application of heat to the involved muscle groups is desirable for the relief of pain and tenderness. Heat may be applied by a variety of means, but hot packs are probably of most value. In the absence of pain and tenderness the patient should be allowed to rest without the disturbance of physical therapy procedures. There does not appear to be well established evidence that any special form of local therapy has any controlling or curative effect on the ultimate extent or outcome of the paralysis.

(e) *Special Measures* 1 Use of the mechanical respirator in the treatment of poliomyelitis has been given much publicity. Spectacular results in individual cases have led to public and professional acclaim, which in a sense obscures both the limits of its field of usefulness and the contraindications in the presence of which its use may actually be harmful. The respirator provides rest for paralyzed or weakened muscles of respiration. It is useful generally only when there is paralysis of the intercostal muscles or diaphragm. For this purpose it is of great importance to recognize early weakness of the respiratory muscles and to protect these muscles at the earliest detectable indication of weakness by placing the patient in the respirator. Respiratory difficulty due to disturbance of the nervous center (bulbar type) is rarely benefited by the respirator. Mechanical respirators have been strategically located in hospitals in each service command and in overseas theaters so that it is possible to transport them without delay to other hospitals on emergency request. Their location is always known to the service command or theater surgeon and on request he can arrange for prompt delivery of the equipment to any installation within his command.

2 In the treatment of this phase in addition to the treatment of bulbar paralysis, nursing care is especially important. It is helpful to place the patient in a prone position with the foot of the bed elevated to 30 or 40 degrees, thus facilitating the drain-

age of mucus, saliva and vomitus from the throat. Suction equipment should always be at the bedside for clearing away any material which may obstruct the breathing passages. This may be a life saving procedure. As long as there is difficulty in swallowing, parenteral fluids may be necessary. It is unwise to give anything by mouth to a patient with pharyngeal paralysis. It should be pointed out that the use of the respirator in this type of case is rarely of value, the respirator is of aid only when there is paralysis of the diaphragm or intercostal muscles or, in rare instances, when there is hypofunction, not dysfunction, of the respiratory center. It may actually be harmful when the respiratory difficulty is associated with or caused by accumulation of obstructing material in the pharynx.

3 The preponderance of available evidence does not indicate that convalescent poliomyelitis serum is of therapeutic benefit. Its administration to Army personnel is therefore not recommended.

4 Therapeutic efficacy has been claimed for neostigmine. Its use, however, remains in an early experimental stage and its administration to Army personnel is not recommended.

b *Subacute Phase*—(1) Definition. The subacute phase begins when the acute illness has subsided, fever, headache and gastrointestinal symptoms have disappeared and the general malaise has lessened.

(2) Management. Treatment of this phase, in addition to the general and special measures mentioned in the acute phase, is directed to protection of the affected muscles and the institution of limited movements. In this stage contractures may develop, and contractures produce deformities. Appropriate orthopedic and/or physical therapy procedures should now be instituted to prevent deformities and to maintain physiologic position. During this period, when muscles are tender and painful, passive movements within the limit of tolerance, as manifested by increased pain, should be instituted by qualified physical therapy aides under the careful direction of medical officers. The physical therapy measures needed include only those conventional methods which have received general acceptance and are in common use. Active motion, when found to cause increased pain and tenderness, should be discouraged. All local therapy should be limited to the involved parts as manifested by pain, tenderness, hypertonicity or paralysis.

c *Convalescent Phase*—(1) Definition. With the disappearance of pain and tenderness, poliomyelitis passes into the convalescent phase, which may last for three to twelve months or occasionally longer. It is during this period that maximal recovery of muscle power occurs.

(2) Management. (a) Both orthopedic and physical therapy measures should be adopted which will enhance this recovery in every way possible. These measures will include mechanical support of the affected parts and physical therapy treatment such as massage, radiant or other heat and exercise of passive, assistive, active or reeducational character, depending on the degree of weakness and extent of paralysis.

(b) Transfer to the general hospital. Treatment in this phase is best carried out in a general hospital. It is therefore desirable that patients be transferred to general hospitals as soon as the convalescent phase is reached. This is ordinarily within eight weeks after onset. In individual cases, as provided in S G O Circular Letter No 73, 17 March 1943, consideration may be given to transfer to the Army and Navy General Hospital, Hot Springs, Ark, where facilities are available for special therapeutic measures.

d *Chronic Phase*—(1) Definition. When there is no longer improvement in involved muscle groups and residual deficiencies have become stationary, the chronic phase begins.

(2) Management. Further corrective measures will ordinarily become the function of orthopedic surgeons, who will be found in the general hospitals to which patients are transferred in the convalescent phase.

For the Surgeon General:

ROBERT J. CARPENTER,  
Lieutenant Colonel, Medical Corps,  
Executive Officer

## LIEUT COL ROBERT W DuPRIEST AWARDED LEGION OF MERIT

The War Department announced on November 12 an award of the Legion of Merit to Lieut Col Robert W DuPriest for "exceptionally meritorious conduct in the performance of outstanding service during and following the Japanese attack on Oahu, Dec 7, 1941. Lieutenant Colonel DuPriest, then chief of the Section of General Surgery, Tripler General Hospital, observing the great influx of seriously injured battle casualties, immediately established an effective system for routing essential supplies to the operating suites, thus greatly expediting the surgical care of the wounded. During the long hours which followed the initial influx of casualties, Lieutenant Colonel DuPriest contributed to the saving of many lives by his wise selection of cases and by his skill as a surgeon." Dr DuPriest graduated from the University of Minnesota Medical School in 1935 and from the U S Army Medical School in 1935.

## TOTAL PNEUMONECTOMY PERFORMED NEAR BATTLE FRONT

According to a recent announcement from the allied headquarters surgeons' office in Algiers, one of the most delicate operations ever done under field conditions was performed by a 5th army surgeon recently under a tented operating room and with a battle raging only a few miles away. The patient, a German soldier, was so badly wounded by shell fragments in the chest that one lung had to be taken out to save his life. Major Paul C Samson, former assistant clinical professor of surgery at Stanford University School of Medicine, San Francisco, performed the operation. Dr Samson graduated from the University of Michigan Medical School, Ann Arbor, in 1928 and entered the service May 10, 1941.

## NEW ASSISTANT COMMANDANT AT CARLISLE BARRACKS

Col Howard T Wickert, who recently returned from an inspection tour of medical installations and activities in the United Kingdom, North Africa and Sicily, has been named assistant commandant of the Medical Field Service School at Carlisle Barracks, Pennsylvania. He succeeds Col Guy B Denit, who has been acting assistant commandant following the recent retirement of Col. Albert S Dabney, now assistant dean of the University of Pittsburgh School of Medicine. Dr Wickert graduated at the Jefferson Medical College of Philadelphia in 1914. He was commissioned in the reserve in May 1917 as a first lieutenant and was called to active duty the following June. He served with the British and American expeditionary forces, subsequently serving in various camps, stations and hospitals in the United States and completing additional studies of army training. On graduation from the Army War College in June 1928 Colonel Wickert was assigned to the Surgeon General's Office in Washington, where he was director of the plans, division and operations service.

## PSYCHIATRISTS ASSIGNED TO UNITS

The War Department, Washington, D C, appreciating the advance made in recognizing and treating symptoms calling for specialized handling by psychiatrists of personnel in the armed forces, is revising tables of organization to include a neuro-psychiatrist, to be assigned automatically to every division. He will be a member of the division surgeon's office and will advise the division surgeon along the line of his specialty. He is to have the rank of captain or major. During the training period of troops, the division psychiatrist will be expected to detect, treat and eliminate actual and potential neuropsychiatric cases. In addition, he will instruct all officers of the division in the recognition, prevention and treatment of mental casualties. In combat zones it will be his duty to sift and clear casualties of this type, with the object of returning to duty all personnel possible.

# PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

## HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their Procurement and Assignment Service quotas for Jan. 1, 1944

1 Prospective interns who have not yet obtained a hospital appointment should communicate with these institutions either directly or through the office of the dean of their medical school. Assistant residents and residents should direct their applications to the hospital superintendent in the usual manner.

2 Institutions having a shortage of interns or residents are again invited to make their needs known to the Council on Medical Education and Hospitals. In reporting shortages, hospitals should indicate the number of interns, assistant residents and residents needed to complete their quotas for Jan. 1, 1944.

### Hospitals Reporting Vacancies for Interns or Residents

(Continuation of list in THE JOURNAL, November 20, p. 775)

#### ALABAMA

Baptist Hospitals Birmingham Capacity 210 admissions 6,887 Mr C. L. Sibley Superintendent (1 resident—mixed)

#### ARKANSAS

Leo N. Levi Memorial Hospital Hot Springs Capacity 75 admissions 845 Regina H. Kaplan Administrator (1 resident—mixed)

#### CALIFORNIA

Queen of Angels Hospital Los Angeles Capacity 390 admissions 11,242 Sister M. Ecbornia R.N. Superintendent (5 interns)

#### COLORADO

Memorial Hospital, Colorado Springs Capacity 204 admissions 2,693 Mr Edward Rowlands Superintendent (2 residents—mixed)  
Corwin Hospital Pueblo, Capacity, 228 admissions 3,932 Samuel B. Potter Chief Surgeon (4 interns)  
Sanatorium of the Jewish Consumptives Relief Society Spivak, Capacity, 300 admissions 139 Dr Arthur Rest Medical Director (1 resident—TB)

#### DISTRICT OF COLUMBIA

Episcopal Eye, Ear and Throat Hospital Washington Capacity 100 admissions 6,374 Deaconess Anna E. Macdonald Superintendent (3 residents—oph, otol)

#### FLORIDA

Riverside Hospital Jacksonville Capacity 60 admissions 1,662 Mr W. A. Nelles, Superintendent (1 resident—mixed)

#### ILLINOIS

Alexian Brothers Hospital Chicago Capacity 272 admissions 5,190 Brother Hugh Miller R.N. Superintendent (3 interns)  
Columbus Hospital Chicago, Capacity 1,0 admissions 3,490 Mother Grace Superintendent (2 interns)  
Garfield Park Community Hospital Chicago Capacity 182 admissions 6,113 Mr C. J. Hasselbauer Superintendent (3 interns)  
Henrotin Hospital Chicago, Capacity 129 admissions 3,139 Miss Veronica Miller R.N. Superintendent (4 interns)  
Holy Cross Hospital Chicago Capacity 168 admissions 4,967 Sister M. Dorothea R.N. Superintendent (assistant resident)  
Mother Cabrini Memorial Hospital Chicago Capacity 144 admissions 4,283 Mother Agnes R.N. Superintendent (2 interns)  
Norwegian American Hospital Chicago Capacity 231 admissions 7,611 William I. Slover Superintendent (3 residents—med, surg)  
Roseland Community Hospital, Chicago Capacity 129 admissions, 3,975 Mr E. O. Massmann, Administrator (3 interns)  
St. Anne's Hospital Chicago, Capacity 340 admissions 9,480 Sister M. Flavia, R.N. Superintendent (1 intern)  
St. Mary of Nazareth Hospital Chicago Capacity 294 admissions 9,850 Sister M. Therese Superintendent (5 interns)  
U. S. Marine Hospital Chicago Capacity 301 admissions, 2,750 H. E. Trimble Medical Officer in Charge (4 interns)  
Walther Memorial Hospital Chicago Capacity 209 admissions 4,825 Mr William C. Martens Jr. Superintendent (4 interns)  
Woodlawn Hospital Chicago Capacity 140 admissions 4,304 Grace L. DeVilbiss R.N. Superintendent (3 interns)  
Macon County Tuberculosis Sanatorium Decatur Capacity 80 admissions 79 Dr David F. Loewen Medical Superintendent (1 resident—TB)  
St. Mary's Hospital East St. Louis Capacity 296 admissions 4,703 Sister M. Prosperia R.N. Superintendent (1 intern)  
Elgin State Hospital Elgin Capacity 4,990 admissions 2,000 Dr Charles F. Read Superintendent (6 residents—psychiatry)  
St. Joseph's Hospital Joliet Capacity 265 admissions 5,825 Sister M. Heinricha Superintendent (4 interns)

Moline Public Hospital Moline Capacity 200 admissions 5,184 Marguerite N. Brooks, R.N., Superintendent (2 interns, 1 resident—mixed)

#### INDIANA

St. Elizabeth Hospital, La Fayette Capacity 285 admissions 5,719 Sister M. Amelia R.N. Superintendent (1 intern)  
Ball Memorial Hospital Muncie Capacity 265 admissions, 6,266 Miss Nellie C. Brown R.N. Superintendent (2 interns)  
St. Anthony Hospital, Terre Haute Capacity 202 admissions, 3,388 Sister M. Gerhardt Administrator (2 interns)

#### KANSAS

Menninger Sanitarium Topeka Capacity 60 admissions 107 Dr Karl Menninger Acting Medical Director (3 residents—psychiatry)  
St. Francis Hospital Wichita Capacity 422 admissions 12,559 Sister M. Oswaldina R.N. Superintendent (4 interns)

#### LOUISIANA

Hotel Dieu Sisters Hospital New Orleans Capacity 300 admissions, 9,484 Sister Alberta Superintendent (2 residents—mixed)

#### MAINE

Saint Mary's General Hospital Lewiston Capacity 175, admissions 3,880 Sister Lachapelle R.N. Superintendent (2 interns)

#### MARYLAND

Franklin Square Hospital Baltimore Capacity 288 admissions 4,776 Jean Hand R.N. Superintendent (4 interns 3 residents—surg OB, med)

#### MASSACHUSETTS

Burbank Hospital Fitchburg Capacity 250 admissions 4,052 Mr Richard Bullock, Directing Trustee (3 interns)  
Providence Hospital, Holyoke Capacity 200 admissions 4,125 Sister M. Stanislaus Superintendent (interns)  
Quincy City Hospital Quincy Capacity 334 admissions 9,126 Dr Joseph P. Leone Medical Superintendent (3 interns 1 asst. resident)

#### MICHIGAN

Eloise Hospital and Infirmary Eloise Capacity 3,768 admissions 4,746 Dr Charley J. Smyth Medical Director (8 interns)  
Charles Godwin Jennings Hospital Detroit Capacity 80 admissions, 2,249 Mr Willis J. Gray Superintendent (2 residents—surg mixed)  
St. Joseph Mercy Hospital Pontiac Capacity 359 admissions 7,763 Sr M. Charles R.N. Superintendent (2 residents—mixed)  
St. Mary's Hospital Detroit, Capacity 375 admissions, 12,090 Sister Marie Superintendent (intern)

#### MINNESOTA

Glen Lake Sanatorium Oak Terrace Capacity 691 admissions 502 Dr Ernest S. Mariette Medical Superintendent (1 resident—TB)  
St. Peter State Hospital St. Peter Capacity 2,306 admission 582 Dr George H. Freeman, Medical Superintendent (1 resident—psychiatry)

#### MISSOURI

State Hospital No. 1 Fulton Capacity 2,837 admissions 416 Dr C. C. Ault, Superintendent (1 resident—psychiatry)  
Memorah Hospital Kansas City Capacity 166 admissions 4,103 Mr F. A. Tobin Superintendent (3 interns)  
State Hospital No. 2 St. Joseph Capacity 2,952 admissions 411 Dr F. A. Carmichael Superintendent (5 residents—psychiatry)  
St. Anthony's Hospital St. Louis Capacity 257 admissions 6,187 Sister M. Florina Superintendent (1 intern)

#### NEBRASKA

Nebraska Orthopedic Hospital Lincoln Capacity 110 admissions 684 Dr F. A. Alcorn Superintendent (1 resident—orth)  
Norfolk State Hospital Norfolk Capacity 1,120 admissions 180 Dr G. E. Charlton Medical Superintendent (2 residents—psychiatry)

#### NEW JERSEY

William McKinley Memorial Hospital Trenton Capacity 157 admissions 3,045 Mr William B. Meytrott Superintendent (2 interns)

#### NEW YORK

Auburn City Hospital Auburn Capacity 240 admissions 5,530 Jerome F. Peck Jr. Acting Superintendent (1 resident—mixed)  
Norwegian Lutheran Deaconesses Home and Hospital Brooklyn Capacity 200 admissions 4,793 Rev C. O. Pedersen Rector (3 interns)  
St. Mary's Hospital Brooklyn Capacity 328 admissions 5,351 Sister M. Helen Superintendent (4 interns)  
Buffalo State Hospital Buffalo Capacity 2,557 admissions 690 Dr Christopher Fletcher Medical Superintendent (1 resident—psychiatry)  
Mercy Hospital Buffalo Capacity 198 admissions 5,334 Sister Mary Mechtild Superintendent (2 interns)  
St. Joseph's Hospital Elmira Capacity 279 admissions 5,669 Sister Margaret Adelaide R.N. Superintendent (4 interns)  
Jamaica Hospital Jamaica Capacity 229 admissions 5,262 Mr F. C. Leupold Superintendent (2 interns)  
St. John's Long Island City Hospital Long Island City Capacity 292 admissions 5,506 Sister Mary Visitation Superintendent (7 interns)  
Hospital for Joint Diseases New York Capacity 350 admissions 6,113 Dr Jacob J. Golub Director (3 interns)

Ellis Hospital, Schenectady Capacity, 470, admissions, 12,275 Miss Mary G McPherson, R N, Administrator (7 interns)  
General Hospital, Syracuse Capacity, 110, admissions, 2,938 Mr Carl P Wright, Superintendent (1 intern)  
Jefferson County Sanatorium Watertown Capacity, 78 admissions, 83 Dr S L Simpson, Superintendent (1 resident—TB)  
Yonkers General Hospital, Yonkers Capacity, 180, admissions, 3,873 Mr Charles E Croft Superintendent (1 intern)

## OHIO

Peoples Hospital, Akron Capacity, 200, admissions, 8,772 Miss Eva P Craig R N Superintendent (3 interns)  
Fairview Park Hospital, Cleveland Capacity, 201, admissions, 5,899 Rev Philip Vollmer Jr, Superintendent (1 intern)  
Good Samaritan Hospital, Dayton Capacity, 350 admissions, 7,999 Sister Frances Maria, Administrator (2 interns, 1 resident)  
St Elizabeth Hospital Dayton Capacity, 365, admissions, 8,560 Sister Virgilia, R N, Administrator (3 interns)

## PENNSYLVANIA

Hamot Hospital, Erie Capacity, 255, admissions, 6,334 Mr Donald M Rosenberger, Director (1 intern)  
Conemaugh Valley Memorial Hospital, Johnstown Capacity, 364, admissions, 6,751 Dr H B Anderson, Medical Director (5 interns)  
American Oncologic Hospital, Philadelphia Capacity, 51, admissions, 548 Miss F C Martin, Superintendent (2 residents—cancer)  
St Joseph's Hospital and Dispensary, Pittsburgh Capacity, 120, admissions, 3,322 Sister Anna Regina, Superintendent (4 interns)  
Shadyside Hospital, Pittsburgh Capacity, 302 admissions, 6,770 Mr J S Hammond Acting Superintendent (1 intern)

South Side Hospital, Pittsburgh Capacity, 225, admissions 5,227 Miss Gertrude L Heatley, R N, Superintendent (1 intern, 2 asst. residents)  
Pottsville Hospital, Pottsville Capacity, 172, admissions, 2,801 Major Roger A Greene, Superintendent (2 interns)  
Columbia Hospital, Wilkensburg Capacity, 219, admissions, 4,615 Miss Martha R Speer, R N, Superintendent (1 resident—mixed)

## TENNESSEE

T C Thompson Children's Hospital, Chattanooga Capacity, 84, admissions, 1,298 Miss E Sikes, R N, Superintendent (asst resident—ped)  
Baptist Memorial Hospital, Memphis Capacity, 500, admissions, 15,434 Mr George D Sheats, Administrator (4 interns)

## TEXAS

Methodist Hospital, Dallas Capacity, 206, admissions, 5,545 E B Germany, Administrator (4 interns, asst resident)

## WISCONSIN

Madison General Hospital, Madison Capacity, 203 admissions, 7,157 Miss Grace Crafts, R N, Superintendent (resident—mixed)  
Columbia Hospital, Milwaukee Capacity, 160, admissions, 4,267 Mr Joseph G Norby, Superintendent (3 interns, 1 resident)  
Evangelical Deaconess Hospital, Milwaukee Capacity, 170, admissions, 5,351 Rev J P Meyer, Superintendent (2 interns)  
Mount Sinai Hospital, Milwaukee Capacity, 195, admissions, 7,903 Mr Harry L Eisen, Acting Superintendent (intern, resident)  
Milwaukee Sanitarium, Wauwatosa Capacity, 147, admissions, 332 Dr Lloyd H Ziegler, Medical Director (1 resident—psychiatry)

## MISCELLANEOUS

## WARTIME GRADUATE MEDICAL BULLETIN

The Bulletin of the Wartime Graduate Medical Meetings made its first appearance on November 15 to present the exchange of ideas for the twenty-four regions participating in the programs of these courses. The bulletin will serve as a medium to discuss the various problems arising in different regions as well as publicize each program. Comdr Edward L Bortz (MC), U S N R, 4200 Pine Street, Philadelphia, is chairman of the central committee of the Wartime Graduate Medical Meetings, which is sponsored by the American Medical Association, American College of Physicians and the American College of Surgeons. The meetings are authorized by the surgeons general of the Army, Navy and U S Public Health Service.

## REFRESHER COURSES FOR NURSES

Federal funds are available under the Bolton act to assist in conducting refresher courses for inactive graduate nurses, according to an announcement directed to the country's 1,300 accredited schools of nursing and to the directors of nursing services in the approximately 1,000 approved hospitals without schools. The program is intended to prepare nurses for return to active service and, in areas where there are large numbers of inactive graduate nurses, schools and hospitals are urged to participate in the plan. The courses may vary in length from six weeks to three months with variation allowed in the time spent in practice each week. Information may be obtained from the Division of Nurse Education, U S Public Health Service, Washington, D C.

## BRITISH SURGEONS AID WOUNDED IN NAZI PRISON CAMPS

Two British army doctors, Major W R Henderson and Dr Derek Taverner, twice, when they could have been saved, accepted imprisonment by the Nazis in order to continue their work of caring for wounded United Nations prisoners. Since their capture at Dunkirk they have conducted a mobile hospital which tours prison camps throughout Germany and Poland. Because of the scarcity of chloroform they perform all but the most difficult operations without anesthetics. Under the most harrowing conditions they work on men with shattered nerves and bad head wounds, reconnecting nerves severed by bullets and shell splinters and thereby restoring useless limbs to service. The names of the two doctors have become almost legendary in every prison camp. Their work and their determination to continue have won the trust of the Germans, and they are provided with special escorts and such facilities as are available. Major Henderson and Dr Taverner went to the front line in

France with the first Nuffield neurosurgical unit in May 1940. While the Germans were advancing toward Dunkirk they were treating more than 100 men. When told to leave, they refused and instead sent the nurses to safety and quietly went on operating. The Germans found them still at work and took the two men and their patients prisoners. When repatriation plans were discussed recently the doctors were told that they could return to England. Again they chose to remain. There is now no question in the minds of the Germans or of the injured British, American and Canadian prisoners that the two men would not escape if they could.

## PUBLIC HEALTH UNDER HITLER

According to NDZ of August 19, serious hemorrhage, burns, frozen limbs and nervous shock may result in death if the blood pressure falls dangerously owing to loss of blood. German science, however, has discovered a method which is saving many men's lives: the preserved serum. Oberfeldarzt Prof Dr Lang, the head of the Institute for Physiologic and Military Chemistry in the Military Academy, said in an interview. The fact that in this war it has been possible to rehabilitate a considerably larger proportion of our wounded than in the last war—between 80 and 90 per cent—sufficiently to enable them to return to their units is convincing proof of the great successes of German military medicine, particularly war surgery. In the frequently very primitive conditions at the front, blood transfusions are not as a rule possible. Research carried on in the institute has shown that the serum derived from blood comprising the vital salts and albumin is completely effective. Thousands of tubes save the lives of innumerable seriously wounded men. It keeps for an unlimited time in its dried form and is simple to use. Another advantage is that the preserved serum can be given without regard to the blood group to which the individual belongs because it does not contain the substances which distinguish the four blood groups and therefore can be used for them all. More recently the serum has also proved valuable in the treatment of children. Infants suffering from dangerous digestive disturbances have been given valuable nourishment by means of the preserved serum, and their lives have thus been saved.

According to *Burgaski Phare* of July 7, certain Bulgarian doctors point out the necessity of opening a faculty of medicine at the University of Skoplje. This is imposed by two causes: (a) the health situation in the liberated lands did not progress during serfdom, and (b) there are too many professors at the faculty of medicine in Sofia.



# ORGANIZATION SECTION

## OFFICIAL NOTES

### REPORT OF MEETING OF MATERNAL AND CHILD HEALTH ADVISORY COMMITTEE

Children's Bureau, U S Department of Labor

On October 21 the Maternal and Child Health Advisory Committee of the U S Children's Bureau met at the Department of Labor in Washington. The committee was called together to consider policies relating to the administration of the emergency maternity and infant care program.

The attendance at the Advisory Committee meeting was as follows:

*Presiding* Nicholson J Eastman  
M D Baltimore

*Present*

Dr Fred L. Adair Chicago  
Dr W. W. Bauer Chicago  
Miss Harriett M. Bartlett Cam-  
bridge Mass  
Dr Jessie M. Bierman San  
Francisco  
Dr Wilbert C. Davison Dur-  
ham N. C.  
Dr M. Edward Davis Chicago  
Dr Robert L. DeNormandie  
Boston  
Dr A. W. Dumas Sr Natchez,  
Miss  
Dr Clifford G. Grullee Evans-  
ton Ill.  
Dr Henry F. Helmbold Roches-  
ter Minn.  
Dr George W. Kosmak New  
York  
Dr Leon R. Kramer Topeka,  
Kan.  
Miss Ruth E. Lewis St Louis  
Dr Joseph I. Linde New Haven  
Conn.

Lieut. Col. Basil C. MacLean,  
Washington D. C.  
Dr Alice F. Maxwell San  
Francisco

Dr Alice N. Pickett Louisville,  
Ky.  
Dr E. D. Pliss Iowa City  
Dr Crover F. Powers, New  
Haven Conn.  
Dr Nathan Smith Ann Arbor  
Mich.  
Dr Francis Scott Smyth San  
Francisco  
Dr George S. Stevenson New  
York  
Dr George M. Wheatley New  
York  
Dr Philip F. Williams Phila-  
delphia  
Dr C. E. A. Winslow New  
Haven Conn.

*Representing the U S Children's  
Bureau*  
Miss Katharine F. Lenroot chief  
Dr Martha M. Eliot associate  
chief  
Dr Edwin F. Daily director  
Division of Health Services

In opening the meeting Miss Lenroot and Dr Eliot reviewed the legislative history leading up to the appropriation of funds for the emergency maternity and infant care program, the steps in the establishment of state plans and national administrative policies, and the current situation in respect to state programs.

In response to questions a brief description was given of the origin of the program. For the benefit of committee members not present at the meeting of the medical members of the committee held on April 6, 1943 following the approval of the first special appropriation for this program, an amplified statement as presented in April, is given here.

The first request for funds to care for wives of enlisted men came to the Washington State Health Department in the summer of 1941 from the commanding officer of Fort Lewis, who asked for assistance in obtaining maternity care for the wives of enlisted men at that post. When submitting this project to the Children's Bureau for approval under the maternal and child health provisions of the Social Security Act the state health agency explained that, prior to the war and the rapid increase in the number of enlisted men stationed at the fort, maternity care had been provided at the fort hospital. By the summer of 1941, however, the facilities of the Army hospital could no longer accommodate the large number of wives seeking maternity care. The project was approved by the Children's Bureau in July 1941. Antepartum delivery and postpartum medical, hospital and nursing care were made available for these young wives, many of whom were at considerable distances from their homes. The need for medical care for these wives arose not only from their inability to pay for care but from the fact that they were nonresidents of the state or county, in most cases strangers in the towns where they lived and wholly unprovided as to medical resources. There was no organized plan under which maternity care could be given. The plan set up by the state health agency provided the necessary organization for the program, payment for doctor and hospital and arrangements for public health nurse and social worker.

The program in the state of Washington came to the notice of other state health agencies, and during succeeding months a number of health officers made inquiry as to whether com-

parable plans could be established to meet similar needs in other military areas. Red Cross and Army Emergency Relief officers reported a rapidly increasing need. The Conference of State Health Officers, meeting with the Children's Bureau in March 1942, requested that the Children's Bureau set aside a portion of the federal funds available to the states to be used as grants for these special projects. By the fall and early winter of 1942 it was apparent that funds available under title V of the Social Security Act would not meet the need. By December 1942 twenty-five states had initiated programs but did not have sufficient funds to continue them for more than a few months.

The first special appropriation of \$1,200,000 for the emergency maternity and infant care program was made in March 1943, to make possible the continuation of programs initiated under the provisions of title V of the Social Security Act and their extension to other states and areas as needed.

In making this appropriation the Congress made clear its purpose in doing so, namely to provide at no cost to the enlisted man or to his wife complete maternity care for the wife and medical and hospital care for the infant during the first year of life. That the care to be provided was something to which the wife was entitled, if she applied for it, was also clear. The legislative history shows that in making provision for this maternity and infant care the Congress had in mind the effect the assurance of such care would have on the morale and peace of mind of the enlisted man himself. The record is clear in connection with the first appropriation in March and the two subsequent appropriations in July and in September 1943 that this morale building factor was one of the primary purposes in the minds of the Senators and Representatives.

In administering the program therefore, constant consideration has been given by the Children's Bureau to the development of policies that would give reassurance to the enlisted man that in his absence his wife and child would be given the care needed and that no administrative procedures, such as a financial investigation, would be used that would leave uncertainty in his mind as to whether or not care would be given or whether the care would depend on his wife's ability to pay even part of the cost. The discussions in the congressional committees leave no doubt as to the intent of Congress on these points.

On Oct. 1, 1943 forty-four states, Alaska, Hawaii and the District of Columbia were operating emergency maternity and infant care programs under approved plans. Three of the four remaining states have submitted plans which will probably be approved in November<sup>1</sup>. The program of care is therefore almost as widespread geographically as the draft of enlisted men under the Selective Training and Service Act of 1940.

Reports from the states on Oct. 1, 1943 showed that care had been authorized in approximately 70,000 cases<sup>2</sup>. Estimates based on the size of the Army the proportion of married men the reported number of pregnancies among the wives, as shown by special studies and experience in the program to date indicate that approximately 300,000 wives may be expected to apply for care during the current year. To provide the necessary funds Congress has appropriated \$23,000,000 for the fiscal year ending June 30, 1944.

Reports of discussion in congressional committees show that Congress understands and appreciates the contribution to the war effort that is being made by physicians in caring for the wives of enlisted men and recognizes the financial sacrifice that some physicians are making by their participation in this program that has as its objective the maintenance of morale among the fighting men at the front through the care of their wives and infants at home.

The introductory remarks were followed by a brief statement by Dr. Daily of certain legal provisions and administrative policies and procedures concerning which numerous questions have been raised. To point up the issues certain questions were placed before the committee for discussion and recommendation and other questions emerged in the course of discussion. The questions discussed by the committee were as follows:

1. Should the program provide cash benefits to enlisted men and their families instead of payments to physicians and hospitals for services rendered?

<sup>1</sup> The plan for Colorado was approved November 10.

<sup>2</sup> By Nov. 1, 1943 a total of approximately 100,000 cases had been reported as under care.

Dr. Bruer reported that the American Medical Association at its meeting last June passed a resolution on this point, as follows:

(a) That the action of the federal government in making funds available for maternity and infant care for the wives and infants of enlisted men be approved, and (b) that adoption be urged of a plan under which the federal government will provide for the wives of enlisted men a stated allotment for medical, hospital, maternity and infant care similar to the allotments already made and provided for the maintenance of dependents, leaving the actual arrangements with respect to fees to be fixed by mutual agreement with the wife and the physician of her choice.

Dr. Bauer also presented an analysis of recent attitudes of state medical associations from various parts of the country, showing that eight out of twenty-four favored cash allotments paid directly to the men's wives.

Discussion by members of the committee brought out the following points of view:

"I think the members of the medical profession believe that the relationship between the patient and the physician should have no intermediary and that the interposition of a state agency does not serve the best interests of all concerned."

"It was the intent of the act and of the Children's Bureau to do away with all anxiety on the part of the wife and the husband absent on military service concerning discussion of fees and meeting the cost of medical care."

"All experience connected with cash indemnification for medical service (not for some of the other things that people receive, but for medical service) points in the direction of discarding the principle of cash indemnity because it doesn't work."

"When cash is paid to the potential patient, it too rarely gets to the physician or to the hospital. The action taken by one medical society after another in setting up their medical service plans is an index of the direction this question is taking, that is, toward a service program with elimination of cash indemnification."

"Because of their experience with similar subsidy arrangements I believe the overwhelming number of hospitals would prefer to be paid directly by the state health agency under this program."

Discussion also brought out the point that a uniform grant would not take into account differences in individual cases due to variation in medical needs. It was further recognized that the situation regarding cash allotments has already been determined by Congress, which decided by a vote in the House of Representatives of 115 to 8 not to shift the program from payment for service to cash allowances. In view of this fact no action was taken by the committee beyond this general discussion.

2. *Should the rate of payment established by each state health agency for "complete maternity care" be assumed to include all services rendered by the attending physician throughout pregnancy, during labor and six weeks post partum?*

Dr. Daily opened the discussion on this question by stating that the Children's Bureau had recommended that each state health agency establish an inclusive rate of payment to cover all services rendered by the attending physician during pregnancy, labor and six weeks post partum, including treatment of intercurrent conditions. It was pointed out by several members of the committee that a specialist in obstetrics or a general practitioner in a large city, when confronted with a serious non-obstetric complication during pregnancy such as might require operative intervention, could call in a surgical consultant under the program who would be paid by the state health department for performing the operation, whereas in the small community the general practitioner might have to perform the operation himself and, under the existing policy, could be paid no additional amount under the program. It was also pointed out by members of the committee that occasionally patients had intercurrent conditions not related to pregnancy requiring prolonged bed care with considerable additional service by the attending physician and that he could not be given additional reimbursement for such service under the present policies.

Considerable discussion was precipitated by an attempt to define what might be considered as included in "complete maternity care." Some opinions expressed on this point were as follows: "I don't think it is fair to ask a physician to take care of a pregnancy, and then everything that piles up in the way of human ills during the time of pregnancy should be saddled on him too." "We should divide these cases into those in which there are complications of an obstetric nature and those in which some intercurrent disease develops, making it necessary to utilize other knowledge possessed by either the general practitioner or a consultant." "Nobody can possibly control a service where there would be an extra payment for every minor condition, but if it is held to relatively major conditions it does lend itself to control."

The committee with only one dissenting vote passed the following recommendation:

That the basic rate of payment for complete maternity care (established by each state health department for payments to participating physicians) should not be assumed to include the treatment of intercurrent conditions not directly attributable to pregnancy which involve major surgery or bed care of more than seven days.

The discussion brought out the fact that the Children's Bureau would necessarily have to consider carefully the feasibility of changing the policy along the line recommended and how it would affect administration of the program in the states.

The question was raised as to whether full dental services should be included as part of maternity care under the program. It was agreed that this would be a desirable goal but that present funds do not permit this development and that the most that might be included now would be payment to dental consultants for services to selected patients.

3. *Should the amount paid by the state health departments to participating physicians for complete maternity care be the only payment to the physician for services rendered under the program?*

The committee commented on this subject as follows: "If physicians can charge these patients additional fees, there is no point in having a program."

"I think it puts the medical profession in a pretty bad light if they are going to throw aside this assistance to enlisted men's families to argue about additional fees."

"I think if the underlying philosophy of this program had been more adequately explained through the medical journals that much of this discussion would not have arisen. The physicians do not want to get more money out of these patients, they want to have the fact recognized that the integrity of the medical profession can be depended on." At the conclusion of the discussion an expression of opinion was requested from the members.

The committee voted without dissent by a showing of hands that it was in accord with the policy that rates of payments under the program should be fixed and that physicians participating in the care of wives and infants of enlisted men under the program should not charge additional amounts to the patient over and above the amount received from the state health agency for services rendered under the program.

4. *How should payment be made for professional services rendered to patients seeking care in hospitals connected with medical schools, when these services are customarily provided by salaried physicians employed by medical schools?*

Several discussers stated that it is impractical to attempt to divide the costs of service and teaching in such instances, since hospital and medical school budgets are so interdependent. The discussion brought out such a variety of practices in different hospitals connected with medical schools and so many unsolved problems that

The committee voted to ask the chairman to appoint a small subcommittee to consider the question of payment for professional services provided by salaried physicians employed by medical schools and to make recommendations.

5. *Should state emergency maternity and infant care programs provide that the enlisted men's wives have free choice in applying for care in voluntary or government hospitals and clinics as well as in offices of private practitioners?*

The present Children's Bureau policy of free choice of existing facilities was discussed. It had been brought out earlier in the meeting that the question had arisen in several of the states as to whether the state health departments should use the funds in paying for care in hospitals that had outpatient and inpatient services, where in the past it had been customary to accept maternity patients, usually on the basis of a flat rate covering medical services rendered by the house staff and hospital care. There had been strong feelings in some places that this type of service should be excluded under the program. It was reported that in one instance the suggestion had been made that all wives of enlisted men who applied for care at clinics be referred to private practitioners on the staff at the hospital. A member of the committee pointed out that this would be equivalent to telling the patient "You cannot go to a voluntary hospital or municipal hospital (for these services). You have to go to a private practitioner."

It was evident from the general trend of the discussion that the committee supported the policy.

That enlisted men's wives should have free choice of all existing facilities in any community for care of themselves.

and their infants and that the state agency should make suitable arrangements for payment for care in clinics, hospitals and private practice.

Endorsement was given without dissent (by a showing of hands).

6 *Should all infants born under the program be routinely referred to child health conferences where available?*

Under the provision of the congressional act the funds for emergency maternity and infant care may not be expended to purchase "similar services otherwise available." This has been interpreted to mean free services provided through the Army or Navy or by or through state or local health departments. State and local health departments are now conducting more than five thousand child health conferences under their regular maternal and child health programs and many more are available in cities. Therefore, wherever such child health conferences are available the state health agencies have referred infants cared for under the program to such conferences for well child supervision. It has been the policy of the Children's Bureau that these facilities should be used.

In response to a question concerning the use of funds under the emergency maternity and infant care program for child health supervision, it was explained by Dr. Eliot that, in communities where there are no child health conferences, such conferences may be established by the use of maternal and child health funds under title V of the Social Security Act, or if the number of infants in a community is too small to warrant the establishment of a conference physicians trained or experienced in the care of infants and children may be paid for health supervision at a rate of payment not to exceed a fixed amount per month or year comparable in general to the cost of supervision in child health conferences. It was suggested by one member of the committee that it would be preferable to use a fixed annual rate for child health supervision when payment is made to private physicians.

Committee members pointed out that some community agencies require mothers to bring referral slips from private practitioners before being accepted by child health conferences—a requirement which presents problems for many mothers, particularly those who have no private physician. It was reported that in some communities the general practitioners are so busy that they are referring all infants to child health conferences for well baby supervision while in other places the physicians wish to provide well baby supervision in their own offices. Evidence showed that many pediatricians in private practice are already working overtime and cannot accept more responsibilities.

During the discussion the statement was made that, "If you start the custom of sending all these infants to child health conferences the result will be a reduction in the private practice of pediatrics." The program should also make arrangements to pay pediatricians for well child supervision.

The job before us now is to take care of these children and leave the implications of what we are doing." Other committee members stated "I think it is the logical procedure to take care of these infants in child health conferences wherever available. I think our difficulty is that we have not nearly enough well child conferences. It seems to me we have to use all facilities available to take care of these babies." Some one pointed out that child health conferences had been organized originally to meet the needs of just such mothers and infants as those included in the program. The low pay rate of the enlisted men in the lowest grades (\$50 to \$78 per month) and the low allowance for the wife with no child (\$50 per month of which \$22 is paid by the husband from his salary) or with one child (\$80) were cited in this connection by Dr. Eliot.

At the conclusion of the discussion the chairman stated that it was the sense of the meeting that all existing facilities for care of well babies should be made available to infants under the emergency infant care program. There was no dissent.

A related question, also briefly discussed, was the payment of the pediatrician for care of the newborn infants. The chairman summarized this discussion as follows:

That the state health agency should authorize payment to a pediatrician for the care of the newborn infant when the obstetrician customarily does not give such care, which statement members of the committee accepted without dissent.

7 *Should all applicants accepted for care under the emergency maternity and infant care program be referred for antepartum, postpartum or infant nursing services?*

It was reported that some physicians do not wish to have public health nurses visit the patients under their care. The public health nursing program of state and local health departments was described as public service supported by tax funds which should be made available to any individual in the community. The same general principle should apply to public health nursing service of a voluntary agency. A member of the committee remarked "I can't see any reason why a physician who understands the function of the public health nurse would not welcome her cooperation, but the fact remains that many physicians do not understand these functions." The chairman stated, without dissent from any members, that the committee appeared to be fully agreed.

That all patients accepted for care should be routinely referred for public health nursing service wherever it could be made available through official or voluntary agencies.

8 *Should the consultation services of specialists in various fields be made available wherever possible to general practitioners participating in the program?*

It was pointed out that most of the state health agencies have approved lists of consultants in various specialties who may be called by other physicians for bedside or telephone consultation, assistance in operations, or actually to perform operations. These consultants are paid by the state health agencies for such services. It was stated that perhaps the greatest contribution that specialists in obstetrics or pediatrics could make in the program would be giving advice and assistance as needed by physicians with less specialized training and experience. It was pointed out that the rate of payment to the attending physician is not reduced when he calls a consultant for advice or assistance. The chairman summarized the discussion by stating that it indicated the desire for greater utilization of consultant services in the program.

9 Several members of the committee stated that they believed this advisory committee would be more representative if it included several general practitioners, and the committee voted to recommend that at least five general practitioners be added to the advisory committee. (After the meeting adjourned members of the committee suggested that additional pediatricians in private practice should also be appointed.) Some of the committee members stated that they believed many of the misunderstandings concerning the program could have been avoided if complete information had been more widely distributed to the medical profession through the medical journals and to the public through the public press.

At the close of the meeting Dr. Daily expressed gratitude to the committee for its suggestions and recommendations which he said would be given full consideration by the Children's Bureau in determining policies for future administration of the program.

## WOMAN'S AUXILIARY

### Colorado

The annual meeting of the Woman's Auxiliary to the Colorado State Medical Society was held in September at the home of Mrs. H. B. Caton, Englewood. Mrs. W. W. King, president, presided at the business session at which the following officers were elected: Mrs. Lawrence T. Brown, Denver, president; Mrs. A. W. Gather, Pueblo, president-elect; Mrs. George E. Pattee, Denver, first vice president; Mrs. James Rigg, Mesa, second vice president; Mrs. C. S. Lockwood, Montrose, third vice president; Mrs. R. S. Johnston, Oter, fourth vice president; Mrs. A. A. Wearner, Denver, treasurer; Mrs. H. H. Heuston,

Boulder, secretary; Mrs. John S. Bouslog, Boulder, corresponding secretary; Mrs. John G. Ryan, Denver, auditor; and Mrs. G. C. Milligan, Arapahoe, parliamentarian.

### New Jersey

The Executive Board of the Woman's Auxiliary to the Medical Society of New Jersey held its fall meeting and luncheon, October 11, at the Essex House. Mrs. Asher Yaguda, state president, outlined the program to be followed by the state auxiliary this year.

The Essex and Hudson County auxiliaries began their year's work with luncheon meetings recently.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

### ARKANSAS

**Dr Grayson Resigns as State Health Officer**—Dr William B Grayson, Little Rock, state health officer since 1933, has resigned, effective November 15. Dr Thomas T Ross, Little Rock, state director of the bureau of local health service, has been appointed acting head, newspapers announced.

### CALIFORNIA

**Physicians Needed**—The Los Angeles County Civil Service Commission announces a nationwide search for physicians for positions in the Los Angeles County Hospital, Olive View Sanatorium, Olive View, and the Rancho Los Amigos, Hondo. There will be no written examinations. Graduation from an accredited medical school and completion of at least a one year internship are required. In addition, at least one year's recent experience in the practice of medicine is required for the tuberculosis physician position. Doctors 21 to 55 years of age are urged to apply for these positions. Applications will be accepted from doctors over 55 years of age who wish to apply for temporary positions as tuberculosis physician. Applications must be filed immediately. Persons interested in these positions, paying \$285-339 and \$335-389 respectively, may obtain applications and full information from the office of the Los Angeles County Civil Service Commission, Room 102, Hall of Records, Los Angeles 12.

**Personal**—Dr Samuel J McClendon, San Diego, has been appointed a member of the California State Department of Public Health to succeed Dr Francis M Pottenger Sr, Monrovia, whose term expired.—Dr Charles L Ianne, San Jose, was appointed as examining physician in the men's health service and associate professor of hygiene in the department of health at Stanford University for the year 1943-1944. Dr Ianne has been director of the Santa Clara County Sanatorium for the past fifteen years.—Dr Frank W Otto, Los Angeles, has been named a member of the California Board of Medical Examiners. He fills the vacancy left by Dr Charles B Pinkham, San Francisco, who resigned after thirty years of state service, most of which was spent as secretary-treasurer of the board. Dr Otto is assistant clinical professor of medicine at the University of Southern California School of Medicine, Los Angeles.—Dr Melvin J Rowe Jr, Long Beach, has been appointed superintendent of the Mendocino State Hospital, Talmage, and Dr Theo K. Miller, Camarillo, superintendent of the Napa State Hospital, Imola.—Dr Frank E Gallison, Ventura, has resigned as health officer of Ventura County.—Dr Howard C Naffziger, professor of surgery, University of California Medical School, San Francisco, has returned after making a survey of military medicine in England, Scotland, Sicily, North Africa and the Near East, *Science* reports.

**San Francisco Society Observes Seventy-Fifth Anniversary**—The San Francisco County Medical Society celebrated its seventy-fifth anniversary, November 7. The commemorative program included a symposium on "The Future of Medicine," preceded by special clinics at the medical schools of Stanford University and the University of California. Speakers in the symposium included:

- Dr Sidney J Shipman, San Francisco, Orientation
- Dr Morris Fishbein, Editor, *THE JOURNAL*, The American Medical Association Looks at the Future of Medicine
- Dr Anthony J J Rourke, San Francisco, A Medical Administrator Looks at the Future of Medicine
- Dr Morton R Gihbons Sr, San Francisco, The Future of Medicine from the Standpoint of the Physician in Practice
- Dr Walter H Brown, Palo Alto, A Public Health Physician Looks at the Future of Medicine

The medical society has owned its own home since 1926. The building was the former Irwin mansion and currently houses the society's offices, meeting rooms and the Irwin Memorial Blood Bank. The first attempt to form a medical society in San Francisco occurred in 1850 in the early days of the gold rush. This pioneer group dissolved within a few months, but other societies were organized in 1851, 1853 and 1855. By 1865 all of these had disappeared because of the rapidly shifting population in the young city, internal disputes and the impact of the Civil War, many of the local doctors in early days had

been Southerners. In 1868 the San Francisco County Medical Society was reorganized with 50 members and has been in continuous existence ever since. At the present time it has 1,187 members, of whom 1,116 are in active practice or on war leave.

### DELAWARE

**State Medical Election and Meeting**—Dr Richard C Beebe, Lewes, was chosen president of the Medical Society of Delaware at its recent annual session, October 12-13, in Wilmington, and Dr Walter C Deakyne, Smyrna, vice president. Other officers include Dr William O La Motte, Wilmington, secretary, and Dr Winfield W Lattomus, Wilmington, treasurer. Speakers at the meeting were:

- Dr Lawrence J Jones, Wilmington, The Responsibility and Future of Organized Medicine
- Dr William P Belk, Wynnewood, Pa., The Clinical and Laboratory Management of Nephritis
- Dr Anthony Sindoni Jr, Philadelphia, War Foods and Diabetes
- Capt Louis C Le Sieur, M C, A U S, Aviation Medicine and High Altitude Flying
- Dr Lemuel C McGee, Wilmington, Medicine's Contribution to Industry
- Dr John H Foulger, Wilmington, The Value of Studies of the Circulation
- Dr Edgar E Evans, Penns Grove, N J, The Effects of Industrial Gases on the Human Lungs
- Dr William H M Erb, Ridley Park, Pa., The Treatment of Varicose Veins
- Dr Charles Levy, Wilmington, Streptococcus Viridans Bacteremia
- Major Spencer T Snedecor, M C, A U S, War Wounds of the Extremities
- Col James B Brown, M C, A U S, The Plastic Surgery of War Wounds
- Dr Machteld E Sano, Philadelphia, A New Method of Skin Grafting
- Dr Charles W Dunn, Philadelphia, Gynecomastia
- Dr William Wayne Babcock, Philadelphia, The Operative Treatment of Cancer of the Rectum.

### DISTRICT OF COLUMBIA

**Ophthalmologic Meeting**—The semiannual meeting of the department of ophthalmology of George Washington University School of Medicine, Washington, will be held on December 4. Members of the staff will present case demonstrations and Col Frederic H Thorne, M C, U S Army, will discuss "Military Aspects of Ophthalmology" and Dr William Thornwall Davis, "Differential Diagnosis of the Vertical Motor Anomalies."

**Changes in the Faculty at George Washington**—Dr Preston A McLendon, clinical professor of pediatrics, George Washington University School of Medicine, has been appointed executive officer in the department of pediatrics. Dr Harry H Donnally, professor and executive officer in the department of pediatrics, has resigned to become professor emeritus. Other changes in the faculty include the following promotions:

- Dr Ronald A Cox to assistant clinical professor of ophthalmology
- Dr Russell J Fields to assistant clinical professor of dermatology and syphilology
- Dr Edgar Leonard Goodman to assistant clinical professor of ophthalmology
- Dr John A Reed to assistant clinical professor of medicine

### ILLINOIS

**Committee on School Health**—On October 29 in Chicago a group of Illinois officials and leaders in education and in public health formally organized the Illinois Joint Committee on School Health, unanimously electing as chairman Dr Roland R Cross, director of the state department of health. The committee, with the consultant services of Clair E Turner, Dr P H, professor of biology and public health, Massachusetts Institute of Technology, Cambridge, Mass, will undertake a comprehensive survey of the school health needs in the state (*THE JOURNAL*, November 6, page 645). Functioning through a small liaison committee and ten subcommittees, the joint committee is preparing to outline what may prove to be the broadest and most far reaching school health program ever developed by any state, it is reported. The general topics in the public school health field will be:

- The underlying principles relative to administration educational procedures and cooperative relationships
- The specific objectives sought in terms of the pupils habit formations attitudes behavior and knowledge
- The provision and maintenance of a healthful school environment under both urban and rural conditions
- The whole question of school health services
- The routine health procedures in the classroom, and the organization of the school day in the interest of the mental and physical health of the pupil
- The health of the teacher

In the teacher training field, general topics selected for study include:

- Student health service
- The hygienic regimen of the student's day
- Health instruction including instruction in health education method both academically and in the course of practice teaching
- In service training through health education workshops in titration extension courses summer courses and so on



The complete membership for the new joint committee is not yet available. At a meeting of the organizing members in Springfield October 26 plans were drawn up for the subcommittees which are to function in the various phases of the program.

#### Chicago

**Portrait of Dr Herrick Features Anniversary Celebration**—A bas relief portrait of Dr James B Herrick for many years a member of the staff of Presbyterian Hospital, was presented to the hospital during special exercises, November 6, commemorating the sixtieth anniversary of the hospital, the fortieth anniversary of the founding of the School of Nursing and the one hundredth anniversary of the admission of the first students to Rush Medical College. The portrait was presented by Dr Ernest E Irons formerly dean of Rush Medical College, on behalf of the associates of Dr Herrick. Another feature of the occasion was the gift of \$20,000 in war bonds by Mrs Clyde E Shorey, president of the women's board of the hospital, to establish a new maternity fund. The hospital also published a commemorative brochure titled "The Presbyterian Hospital and the Progress of Medicine, 1883-1943."

**Fernel Sentenced for Food and Drug Violation**—Dr Jean Paul Fernel, self styled plastic surgeon was found guilty, November 16, and sentenced to serve one year in the county jail and ordered to pay a fine of \$500 on charges of violating the Federal Food Drug and Cosmetic Act of 1938, newspapers report. The judge was Philip L Sullivan and the decision was given after a bench trial in federal district court. The government contended that Fernel 'sold and transported drugs in interstate commerce which were not as represented on their labels'. Fernel was granted a sixty day stay of execution pending an appeal. In passing sentence, Judge Sullivan is reported to have said "I am convinced that this was a well conceived scheme to defraud an unwary public and to extract money from the sick under false pretenses." Fernel was found guilty on all seven counts of an indictment charging him with misbranding six preparations which he claimed would cure a variety of human ills, from arthritis to sagging breasts newspapers reported. Fernel has been at liberty under a bond of \$1500 since his arrest, it was stated.

#### KANSAS

**The Hertzler Lecture**—Dr Evarts A Graham, Bixby professor of surgery, Washington University School of Medicine, St Louis, will deliver the annual Arthur E Hertzler Lecture on December 1 at the University of Kansas School of Medicine, Kansas City. His subject will be 'Bronchiogenic Carcinoma of the Lung'. The lecture was established in 1935 in honor of Dr Hertzler by the Phi Beta Pi Medical Fraternity.

#### KENTUCKY

**Changes in Health Officers**—Dr Frank M Melton La Grange, has been named director of the Madison County Health Department, succeeding Dr Max E Blue Richmond who has been on leave of absence on account of ill health.—Dr Chadwick W Christine Maysville has resigned as head of the Mason County Health Department to return to private practice.

**Graduate Courses**—The Kentucky State Medical Association sponsored a postgraduate course in Mayfield for four consecutive Thursdays, beginning October 28. Among the speakers were

Dr John B Floyd Louisville Unrecognized Tuberculosis and X Ray Findings.  
Dr Joseph G Sherrill Louisville Cancer  
Dr Sherrill Fractures  
Dr Alice D Chenoweth Louisville Emergency Relief  
Dr Benjamin L Brock, Waverly Hills, Tuberculosis  
Dr John E Dunn Paducah Childhood Pneumonias  
Major Woodford B Troutman M C A U S Heart Murmurs  
Dr Aura J Miller, Louisville Pathology of the Heart  
Major Troutman Coronary Thrombosis  
Dr Henry G Reynolds Paducah Glaucoma.  
Dr Doyle Occupational Diseases

#### MASSACHUSETTS

**Anniversary of Ether Day**—On October 16 informal ceremonies at the Massachusetts General Hospital Boston marked the ninety-seventh anniversary of ether day. Dr Nathaniel W Faxon director of the hospital among other speakers reviewed the work of Dr William T G Morton who successfully administered ether vapor to produce unconsciousness Oct. 16, 1846.

**Dr Aub Named Professor of Research Medicine**—Dr Joseph C Aub since 1928 associate professor of medicine in the Harvard Medical School, Boston has been appointed professor of research medicine. Dr Aub graduated at Harvard in 1916 and has been a member of the staff of Harvard since

1919. The board of trustees of the Massachusetts General Hospital at its October meeting voted that the official name of Dr Aub's laboratory shall be the Medical Laboratory of the Collis P Huntington Memorial Hospital.

**Gift to Tufts Building Fund**—A recent gift of \$125,000 to the building fund of Tufts College Medical School Boston, was announced by Leonard Carmichael, LL D., president of Tufts College October 6, during the fiftieth anniversary celebration of the medical school. The building fund has now received \$746,000 of the \$850,000 it had set as a goal. This total is exclusive of other contributions which were made for various other specific purposes in connection with the medical school. A congratulatory message from President Roosevelt was read during the commemoration exercises.

#### MICHIGAN

**Dr Darling Joins National Research Council**—George B Darling, Dr PH, president and comptroller of the W K Kellogg Foundation Battle Creek, has resigned to become associated with the division of medical science of the National Research Council. Dr Darling joined the Kellogg Foundation in 1932 as associate director. He has been president of the organization since the death of the late Dr Stuart Pritchard in 1940.

**Corporation Formed for Medical Science Center**—Wendell W Anderson has been elected president of the newly formed corporation for the proposed \$50,000,000 Medical Science Center of Wayne University. Other officers include Ormond E Hunt, vice president Frederick J Gartner, secretary and B Edwin Hutchinson, treasurer. The new corporation will select a site immediately and after approval by the Detroit Board of Education will go ahead with construction plans.

**Personal**—Dr Edward F Fisher, councilman of Dearborn and member of the state legislature, has been appointed a member of the new board of Wayne County institutions.—Dr Allan W McDonald has severed his connection in Detroit to practice on Mackinac Island. In resigning from his activities with the Wayne County Medical Society, which he served as president in 1940-1941, Dr McDonald stated that the community on Mackinac Island, consisting of about 600 persons is now without a physician.

#### MINNESOTA

**Three Counties Accredited for Tuberculosis Work**—On October 5 public ceremonies were held in Luverne to award certificates of accreditation in tuberculosis control to Rock, Nobles and Pipestone counties. Speakers included Governor Edward J Thye. This program is a cooperative plan of the state medical association and the state department of health to accredit counties showing a tuberculosis mortality rate not to exceed 100 per hundred thousand of population and an incidence of tuberculosis infection among seniors in high school not to exceed 15 per cent. The program was launched in 1941, with Lincoln County receiving first honors on December 11 of that year. Olmsted, Murray and Steven counties were accredited during 1942, and the recent three counties bring the total to seven in the state now accredited for the control of tuberculosis. At the recent celebration special honor was paid to Dr Charles L Sherman, Luverne president of the Southwestern Minnesota Sanatorium Commission since it was first appointed twenty-eight years ago, and Dr Sidney A Slater Worthington, superintendent of the sanatorium since 1919 for their work in achieving the record since five of the seven counties are in the Southwestern Minnesota Sanatorium district.

#### MISSISSIPPI

**Personal**—Dr Billy S Guyton who recently resigned as dean of the University of Mississippi School of Medicine University (THE JOURNAL, September 25 p 223), will continue as professor of surgery at the school, it was announced.—Dr Henry G Waldrop, Ripley, has been appointed health officer of Clarke and Wayne counties effective September 1.

#### NEBRASKA

**University News**—Dr George E Robertson has been promoted to associate professor of pediatrics at the University of Nebraska College of Medicine, Omaha and Dr Elmer W Bantin to assistant professor of pediatrics.

**Annual Assembly**—The Nebraska State Medical Association announces that it will hold its annual assembly May 1-4 at the Fontenelle Hotel Omaha at which the following topics will be considered: tropical diseases as they influence this commonwealth; nutrition in medicine and surgery; surgical treatment of upper abdominal pain; newer aspects of fracture treatment and uterine bleeding.



## NEW YORK

**Personal**—Dr Bernard McD Krug, New York, has been appointed commissioner of health of Cortland County for the duration of the war, effective November 7. He fills the vacancy left by Dr William E Mosher Jr, Cortland, who was granted leave of absence to enter military service (THE JOURNAL, October 23, p 496)

**The Wagner-Murray-Dingell Bill**—A special meeting of the Medical Society of the County of Monroe was held at the Rochester Academy of Medicine, Rochester, November 17, to discuss the Wagner-Murray-Dingell bill. Among the speakers were Hon James E Murray, U S Senator from Montana and co-author of the bill, Dr Louis H Bauer, chairman, Council on Medical Service and Public Relations, American Medical Association, Mr Marion B Folsom, co-chairman, council on postwar planning for Rochester and Monroe County, and Mr Charles S Wilcox, president, Rochester Hospital Service Corporation

**Harry D Clough Memorial Prize**—The establishment of an award for house officers of the Rochester General Hospital, Rochester, to be known as the Harry D Clough Memorial Prize, was announced October 22. The award, which will consist of a \$25 cash prize, will be granted at the close of each weekly conference session to the house officer who has contributed most to the success of the conferences in the quality of case presentations, discussions and assistance in the selection of clinical material. The name of the winner will be placed on a special plaque which has been hung on the north wall of the conference room. The judging committee will be formed from staff members. The creation of the prize will be a fitting memorial to Dr Clough, assistant medical director of the hospital, who died Oct 1, 1942 and who worked for the development and improvement of the hospital conferences

## New York City

**Macfadden Health Bureau Fined \$500**—On November 9 the Macfadden Health Service Bureau, Inc., of 205 East 42d Street, pleaded guilty to the charge of unlawfully practicing medicine, which charge had been preferred by the state education department in the Court of Special Sessions of the City of New York, County of New York. The bureau was sentenced to pay a fine of \$500

**Dr Timme Receives Townsend Harris Medal**—Dr Walter Timme, director of the neuroendocrinology department of the Neurological Institute of New York and professor of clinical neurology at Columbia University College of Physicians and Surgeons, received one of four Townsend Harris medals awarded at the sixty-third annual alumni dinner of City College in the Hotel Roosevelt, November 13. The medals are named after the founder of the college and are awarded annually. Dr Timme graduated in the class of 1893. The citation accompanying the award acknowledged Dr Timme's contributions to the field of endocrinology in which he is credited with being a pioneer and recognized his contribution to the art and science of healing as "teacher, hospital consultant and specialist in practice"

**Grant to Study Psychiatric Needs of Rejected Service Men**—A one year grant has been allocated by the Commonwealth Fund to the New York City Mental Hygiene Committee, State Charities Aid Association, to study the psychiatric needs of men discharged from or rejected for military service. The professional staff for the project includes Dr Solomon W Ginsburg, psychiatrist, Mrs Rae L Weisman and Mrs Bluma Swerdloff, psychiatric social workers, R. J. Valentine, psychologist, and Mr and Mrs Raymond Franzen, research consultants. A study of 500 each of psychiatric rejections and discharges will be made in order that an accurate picture may be obtained for recommendations to fill whatever needs may be determined, especially to find out how many persons in these groups need rehabilitative services which the community does not offer

**Dr Bristol Named Executive Director of Hospital Council**—Dr Leverett D Bristol, New York, health director of the American Telephone and Telegraph Company since 1929, has been appointed executive director of the Hospital Council of Greater New York, effective December 1. The council is a community planning agency to coordinate and improve the hospital and health services of New York City and to plan the economic development of these services in relation to community needs. It is made up of about twenty leading voluntary and government health, hospital, medical, welfare and business organizations of the state and city and its work is carried on through a planning committee made up of representatives of member agencies. The council has a close working relationship with the United Hospital Fund of New York City. One of its

immediate projects will be to develop and plan for the present and postwar periods for the organized care of the sick in greater New York. Dr Bristol's offices will be at 370 Lexington Avenue, New York 17

## OHIO

**Dr Zininger Named Acting Director of Surgery at Cincinnati**—Dr Max M Zininger, associate professor of surgery, has been appointed acting director of the department of surgery at the University of Cincinnati College of Medicine. Dr Zininger graduated at Johns Hopkins University College of Medicine, Baltimore, in 1921 and has been at the University of Cincinnati since 1925 with the exception of 1928-1930, when he served as professor of surgery at the Peiping Union Medical College, Peking, China. A total of \$296,773.33 has been given by friends of the late Dr Mont R Reid, professor of surgery at the time of his death, May 11, for the Mont Rogers Reid Memorial Fund

## TEXAS

**Texas University News**—The staff of the University of Texas Medical Branch, Galveston, presented a special symposium on psychosomatic medicine before army personnel at Fort Crockett, Galveston, Camp Wallace and Ellington Field on October 28. The symposium included discussions of disorders of the gastroenteric system by Dr Charles T Stone, on effort syndrome by Dr Edward H Schwab, on neurosurgery by Dr Samuel R Snodgrass and on skin disorders by Dr Chester N Frazier, and special clinics were conducted by Drs Jack R Ewalt and Titus H Harris.—Robert I Wise, Ph D, formerly director of the public health laboratory, Houston, has been named assistant professor of bacteriology at the school and Glenn Drager, Ph D, formerly in the department of anatomy, West Virginia University School of Medicine, Morgantown, assistant professor of anatomy

**"Dr" McElroy Sentenced to Penitentiary**—"Dr" Archibald Leslie V McElroy, who has been chief physician treating employees working on the Denison Dam Project, was sentenced on October 21 to three years in a government prison after he refused to produce proof of when he had attended Tulane University of Louisiana School of Medicine, New Orleans. McElroy had served an eighteen month sentence in Leavenworth after he pleaded guilty to prescribing narcotics without a license, it was stated. The challenge to McElroy's medical standing was made in the process of a hearing to revoke probation in a federal court narcotics sentence given him in 1940. McElroy is reported to have violated the conditions of his probation, principally failing to report to federal authorities. He had been located practicing at the dam after a search of many months. It was stated that McElroy had refused to reveal from what medical school he had graduated or where he had lived prior to 1941. Dr Thomas J Crowe, Dallas, secretary of the state board of medical examiners, stated that an exhaustive investigation had failed to produce any evidence showing that the man was a medical school graduate or had ever held a license to practice. Testimony indicated that a bona fide physician with the same name lived in Fort Worth until his death, implying that McElroy had assumed the identity of the dead physician, it is stated. McElroy is reported to have served in the U S Penitentiary at Fort Leavenworth and the Federal Correctional Institution, Texarkana. Available information indicates that McElroy has served a number of jail sentences and has been committed to various mental institutions. He has operated under a number of aliases, always claiming to be a graduate of Tulane University. Available data, however, state that his record from the time he was discharged from the U S Army in 1918 shows that he was not out of jails and penitentiaries long enough to have taken a medical degree. A number of bad check charges are also linked to his record

## VIRGINIA

**State Medical Election**—Dr Henry B Mulholland, professor of the practice of medicine at the University of Virginia Department of Medicine, Charlottesville, was chosen president elect of the Medical Society of Virginia at its annual meeting in Roanoke, October 26. Dr Claude B Bowyer, Stonega, was inducted into the presidency. New vice presidents are Dr John O Boyd, Roanoke, Henry A Latane, Alexandria, and Nicholas G Wilson, Norfolk. Miss Agnes V Edwards, Richmond, was reelected executive secretary-treasurer. Richmond was chosen as the site of the 1944 annual session. The society recommended the abolishment of the office of coroner in all cities and counties of the state and suggested the substitution of a medical examiner system to be known as the state commission on postmortem examinations and to serve without compensation

## WISCONSIN

**Pan American Health Day**—On November 18 Pan American Health Day was observed at the University of Wisconsin, Madison. Dr Estano Hormacche, assistant director of the Institute of Infectious Diseases Montevideo and professor of bacteriology, University of Montevideo spoke at the special program on Etiology of Infantile Summer Diarrhea, with Special Reference to Salmonella Infection and Dr Alfredo Sordelli, director of the Argentina National Institute of Health, on "Diphtheria." Pan American Health Day in the United States is celebrated annually on December 2 by proclamation of the President of the United States in recognition of almost four decades of Pan American cooperation in the field of public health and as a stimulus to future endeavor.

**Dearholt Day**—The fourth annual Dearholt Day was held in Milwaukee on November 15 and in Madison on November 16 in commemoration of the late Dr Hoyt F. Dearholt's service to tuberculosis education. Dr Eben J. Carey, dean of the Marquette University School of Medicine, Milwaukee, presided at the Milwaukee session, and guest speakers included Drs John B. Barnwell, Ann Arbor, Mich., on "Contrasting Clinical Reactions to the Tubercle Bacillus and An Experience in the Control of Tuberculosis in a General Hospital" and Leroy U. Gardner, Saranac Lake, N. Y., "Sclerosis and Its Relation to Tuberculosis" and "Tuberculosis in Industry." In Madison, Walter J. Meek, Ph.D., acting dean of the University of Wisconsin Medical School, presided over the program participated in by the same guest speakers.

## GENERAL

**Examinations in Dermatology and Syphilology**—The next examinations of the American Board of Dermatology and Syphilology will be held in Chicago June 9-10, 1944. The written examination will be held in various large cities of the country, May 8. Applications, which must be filed before April 1, should be sent to the assistant secretary, Dr George M. Lewis, 121 East 60th Street, New York.

**Postwar Traffic Accident Committee Named**—The National Safety Council announced the formation of a special committee of authorities to study postwar traffic accident problems. The new group is called the postwar traffic safety planning committee of the street and highway traffic section of the National Safety Council. Kenneth B. Colman, president of the Seattle Safety Council and chairman of the war production transport commission of Seattle is head of the committee.

**Annual Appeal for Infantile Paralysis Funds**—On January 30 the President's birthday will again serve as a designated appeal for funds for the National Foundation for Infantile Paralysis. The annual appeal will run from January 14 to 31 with the President's birthday celebration climaxing the event. Local chapters of the National Foundation now cover 3000 of the 3070 counties of the United States. Half of the amount collected is returned to the counties and the other half is used by the National Foundation.

**North Pacific Surgical Meeting**—The annual session of the North Pacific Surgical Association was held at the Hotel Vancouver, Vancouver, B. C., November 19-20. The Founder's Lectures were presented by Dr Roscoe R. Graham, assistant professor of surgery at the University of Toronto Faculty of Medicine, Ontario, on "The Influence of Experimental Study on Clinical Practice in Intestinal Obstruction," "The Present Status of Surgical Procedures on the Biliary Tract" and "Surgical Therapy in Duodenal Ulcer."

**Diabetic Identification Tags**—At the suggestion of the medical division of the U. S. Office of Civilian Defense, to prevent dangerous delay in diagnosis and proper treatment during unconsciousness or coma, Eli Lilly and Company Indianapolis 6 in cooperation with the American Diabetes Association will provide metallic identification tags to be worn by diabetic patients or carried in the pocket, carrying the inscription "If I AM DIABETIC Call Physician." No advertising of any sort appears on the tags, which will be supplied to the medical profession on request.

**Coyotes Carry Rabies Threat**—The threat of a rabies epidemic as serious as the disastrous outbreak in 1915 was indicated in a statement to the press November 5 by Paul C. Quick, Portland, Ore., regional supervisor of the U. S. Fish and Wildlife Service. Mr. Quick stated that the coyotes are taking 20 per cent of all livestock in six western states: Oregon, Washington, Idaho, California, Nevada and Montana. Despite the seizure of 10,578 coyotes over a recent twelve month period,

the animals probably are more numerous than at any time since the government control program started, Mr. Quick stated, in commenting on a survey of the cattle and sheep country of the six affected states.

**Chemical Patents and Applications Available in Abstract Form**—The chemical patents and patent applications vested by the Alien Property Custodian have been abstracted by the Chicago Section, American Chemical Society, and are now being indexed by a committee of the Science and Technology Group, Special Libraries Association. Beginning in January 1944, these abstracts will be published in thirty-one classified indexed pamphlets, to be followed by a master index and a supplement of new abstracts. Medical men will be interested in the "Pharmaceuticals" class and in certain subclasses under "Foods," "Organic Reactions," "Organic Synthetics" and "Sanitary Chemistry." The prices, if demand is adequate to justify them, will be \$1 for any booklet and \$25 for all thirty-three booklets. The paper situation necessitates close adjustment of the printing to the known demand; orders should be placed not later than December 10 to make sure of receiving copies. Order blanks (already sent to all members of the American Chemical Society and of the Science-Technology Group, Special Libraries Association) may be had from the Alien Property Custodian, Field Building, Chicago 3.

**Charles L. Mayer Award**—The National Science Fund of the National Academy of Science, 515 Madison Avenue, New York 22, announces that the closing date for the acceptance of manuscripts and published articles for the 1943 Charles L. Mayer prize will be January 15. The award will be made for an outstanding contribution to present day knowledge of factors affecting the growth of animal cells with particular reference to human cancer. Consideration will be given to contributions published during 1943 or in manuscript. The 1942 award went to Dr Charles B. Huggins, professor of surgery (urology) at the University of Chicago School of Medicine, for his work on the endocrine control of prostatic cancer. The advisory committee in charge of recommendations for the 1943 Charles L. Mayer Award includes Dr Alan Gregg, director for the medical sciences of the Rockefeller Foundation, New York; Dr George H. Whipple, dean of the University of Rochester School of Medicine and Dentistry, Rochester, N. Y.; Dr Peyton Rous, Rockefeller Institute for Medical Research, New York; Robert R. Williams, D.Sc., chemical director of the Bell Telephone Laboratories, New York; and Elihu Root Jr., LL.D., New York.

## CANADA

**Grant for Study on the Adrenal Cortex**—A grant of \$50,000 over a five year period has been given to McGill University from Gelatin Products Ltd., and Frank W. Horner, Ltd., to support research under the direction of Dr Hans Selye, associate professor of histology. The research is directed specifically at improving bodily resistance to all types of strain to which members of the armed forces are subjected and centers around the adrenal cortex.

## FOREIGN

**New Chair of Human and Comparative Pathology**—W. H. Collins, Buckinghamshire, has given £100,000 to the Royal College of Surgeons of England, London, to be available immediately, to endow the department of pathology and create a chair of human and comparative pathology and provided for a similar bequest in his will to endow a department of anatomy and establish a chair of human and comparative anatomy. In a letter to the press, reported in *Science*, Mr. Collins acknowledged the injury to these departments by enemy action, stating that he considered the endowments essential to restore the units to their scientific position.

**Medals Awarded**—The Royal Society has awarded its Copley Medal to Sir Joseph Barcroft, Cambridge, a fellow of the society, for his scientific work and particularly his own personal risk of death to increase the scientific knowledge of breathing. Sir Joseph once spent a week in a glass case to test the effects of insufficient oxygen; he tested prussic acid by remaining in a gas-filled chamber with a dog that died in less than a minute, before the war he tested the force of blast by sitting in air raid shelters while bombs were dropped close by. The Royal Society also awarded its Davy Medal to Ian M. Heilbron, Ph.D., Kensington, for his work in the production of penicillin and his contributions to the knowledge of organic chemistry. Dr. Heilbron is scientific adviser to the ministry of production and professor of organic chemistry at the Imperial College of Science and Technology.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct. 16, 1943

#### Improved Vital Statistics During War

The vital statistics report which has just been published for the year ended last March shows continued improvement over prewar figures, except for the two usual problems of war—venereal diseases and tuberculosis. Maternal and infant mortality rates and death rates among civilians were the lowest ever recorded in England and Wales. The incidence of infectious diseases was remarkably low, probably the best on record. But rising claims under national health insurance suggest the considerable increase in short illnesses which might be expected after more than three years of war.

The deaths in England and Wales in 1942, including non-civilian deaths and those due to enemy action, numbered 480,137. This was 55,043 less than in 1941. Among females the average rate was 6.84 deaths per thousand living, 8 per cent better than in any previous year, notwithstanding the inclusion of deaths from enemy action and the withdrawal of large numbers of healthy young women from the civilian population. Among civilian males the average rate was also the lowest ever recorded in spite of the considerable effect of selective recruitment. Mortality of children at the preschool ages of 1 to 5, which had declined 47 per cent between 1931 and 1939, showed a further improvement of 2 per cent in 1942, at the school ages of 5 to 15 the low level reached in 1939 was regained. Live births, which numbered 654,039, increased by 66,811 over the previous year. There was a natural increase of population amounting to 173,902, the birth rate of 15.8 per thousand being the highest since 1931.

In his comment the minister of health says that the nation's prodigious war effort has imposed a severe strain on the health of the people, which they have withstood with dogged determination and astonishing success. As far as we could, he said, we have been ready to meet any attack that disease might make. But the strains of war are progressive and their effect on health may be of long term nature. Certainly in the fifth year of the war, the minister stated, we must not relax our watchfulness or reduce our activity. Explanation of the improved vital statistics is difficult and complex, but one important factor may be pointed out, the disappearance of unemployment consequent on the colossal demand for labor in war industries and recruitment for the fighting forces.

#### St Dunstan's and Blinded American Soldiers

The institution known as St Dunstan's was founded to give occupational training to those blinded in the war of 1914-1918. Its twenty-eighth annual report shows that 339 men and women blinded in war service have been admitted in the present war. Of these, over 100 have recovered useful sight and returned to military or civil life. Of the remainder, 87 men and 7 women are acquiring normal sight and will later learn an occupation. Forty-one men and women have left and returned to their old jobs, while others have become trained telephonists or masseurs. Some are working in munitions or aircraft factories. Of the men blinded in the last war, 1,777 are still under St Dunstan's care.

At a luncheon given by Brig Gen Paul R. Hawley, chief surgeon, European Theater of Operations, United States Army, Sir Ian Fraser, founder and chairman of St Dunstan's, was the chief guest among a distinguished audience which included the United States ambassador, Mr. John G. Winant. Mr. Winant said "Britain has pointed the way in many fields of human betterment. But in no field have her achievements been more

outstanding than in the work of St Dunstan's. This work has removed from hearts that now number thousands the fear of blindness, which our guest of honor today once said is much greater than blindness itself." The chief surgeon told his audience, which also included Lieut. Gen. Jacob L. Devers, commanding general of American Forces in the European Theater of Operations, and Major Gen. John C. H. Lee, commanding general, United States Army Services of Supply in the European Theater, that it was "a high privilege for the United States Army to send its blinded soldiers to St Dunstan's for a course of training before they returned to their own country."

### BRAZIL

(From Our Regular Correspondent)

Oct. 20, 1943

#### Plague in Northeastern Brazil

Plague is still an endemic disease in the northeastern section of Brazil (states of Ceara, Rio Grande do Norte, Parahiba, Pernambuco, Alagoas and Bahia), an important district from the standpoint of global war. Several hundred cases of human plague have been registered in this section of the country in the past few years (94 in 1940, 155 in 1941, 10 in 1942) and several more during the first months of the present year. In order to improve the control of this disease, Dr. Marcelo Silva and a few collaborators of the Plague Division of the National Department of Health have undertaken during the last three years careful epidemiologic and experimental studies, the conclusions of which have been recently published and are summarized here. The most important plague foci in this semiarid region are in the mountains (500 to 2,000 feet), and the temperature and humidity directly influence monthly and annual variations in the incidence of the disease. In the state of Ceara, which has a hot, dry climate, the morbidity and mortality rates are minimum (an average of 20 per cent of the cases are fatal). In this state human plague is closely associated with rain distribution, humidity being the main factor to awaken the activity of latent foci of the disease. Several hundred experimental inoculations to ascertain the sensibility of sylvatic rodents to plague have fully demonstrated that their susceptibility is equal to that of the guinea pig, if not higher. House rats are the main source of infection, the disease often being present in these animals in an atypical, mild form. In this dry climate the reactivation of foci which have been dormant for two to five years is not infrequent. Since this is much longer than the life span of the common flea, pulicides are of minor epidemiologic importance in the maintenance of chronic foci. Contrary to the information frequently given by common country people, epidemics are neither extensive nor intense among rural rodents. As a rule these epizootics are observed only in the areas of distribution of both kinds of rodents—the house rat, a normal carrier of *Xenopsylla cheopis*, and the wild rodent, the common parasites of which are not transmitters of plague, as extensive researches have proved. The limited extension of the infection among sylvatic rodents, confined to the region of their contact with domestic rats, and the short duration of epizootics in these rodents are probably due to an incomplete adaptation of *Xenopsylla cheopis* to such animals, owing perhaps to the hardness and dryness of their skin. It was necessary to ascertain the susceptibility of the domestic cat to plague, which has been done through numerous experiments which proved this animal to have a low sensibility. Using the digestive route exclusively, it has been impossible to infect this animal, although in some instances infection may apparently occur, as shown by visceral hyperemia, edema and hyperemia of the lymphoid organs and localized intestinal lesions which might have been produced by the endotoxic action of *Pasteurella pestis*. Only rarely does plague infection in the cat show the characteristic lesions commonly seen in rodents.

This can be accomplished by massive inoculation with infective material which breaks all the organic defenses of the animal. The most frequent instance is in all defined morbid picture without the presence of *Pasteurella pestis*.

The authors present their personal contribution of two new methods of plague diagnosis—the intradermal reaction, which makes possible the epidemiologic retracing of the disease in stricken regions, and the direct inoculation of blood from the patient into the peritoneum of guinea pigs as a means of rapid presumptive diagnosis to indicate immediate prophylactic measures. The intradermal reaction has been performed with the help of an antigen prepared according the leprosy Mitsuda technique but using the satellite gland of a guinea pig transcutaneously inoculated with a regional strain of *Pasteurella pestis*. This method has given promising results owing to its high specificity and sufficient sensitivity but the number of cases discovered through its use is yet rather low (about 50). The blood diagnosis is based on the early bacteremia in human plague and on the fact that the guinea pig plague peritonitis obtained through the inoculation of blood is more frequent than that obtained through the parallel inoculation of bubo material. Twelve hours after the inoculation a peritoneal puncture is performed, as suggested by Gottschlich.

Concerning the control measures, the authors do not recommend the routine, periodic blocking of the infected areas through poisoning, which they describe as expensive and of low relative efficiency. They much prefer generalized ratproofing of houses, fumigation of rat galleries with hydrocyanic gas, active immunization of the menaced population with a live vaccine, and the combined use of flame throwers and rat hunting dogs.

#### Ectopic Pregnancy and Hysterosalpingography

To the works of Heuser concerning the use of hysterosalpingography in uncomplicated pregnancy Drs Arnaldo de Moraes and J Rosado of Rio de Janeiro have now added experience in 10 cases of ectopic pregnancy. The hysterosalpingography is not an exploratory method for cases in which the ectopic pregnancy is complicated by rupture and hemorrhage and in which the condition causing the internal bleeding requires immediate intervention by the surgeon but the method is valuable for confirmation of the diagnosis in those cases in which there is no rupture. In a recent paper Drs de Moraes and Rosado described the radiologic symptoms of ectopic pregnancy. They concluded that the test of Cotte of great diagnostic value in gynecology, gains real importance in the radiologic study of ectopic pregnancy revealing an atypical diffusion of the oil surrounding the tumor. The method is harmless and does not have the dangers of the Douglas puncture, biopsy of the endometrium, the peritoneoscopy and gynecologic pneumeroentgenography. The hysterosalpingography is indicated in cases of doubtful diagnosis of broken or complicated ectopic pregnancy, provided it is not accompanied by symptoms demanding urgent attention. It is also indicated in cases of normal pregnancy combined with some gynecologic disorder simulating ectopic pregnancy.

#### Pancreatic Diseases under Radiologic Examination

Radiologic examination of the pancreas is not indicated unless the indirect data it provides are of great scientific importance in exceptional conditions, it is pointed out in a paper published recently by Dr Manoel Campanario in São Paulo. Enlargement of the pancreas due to several pathologic processes is accompanied by some functional alterations and also alterations in form and topography of adjoining organs principally the stomach duodenum and transverse colon. When rigorously interpreted, such alterations are partly the basis for radiologic study of the pancreas. After a succinct study of the anatomy of the pancreas, Dr Campanario proceeds to analyze the alterations produced in adjoining organs by pancreatic tumors.

Radiologic evidence of pancreatic tumors is described minutely. Under unusual circumstances, chronic pancreatitis may resemble pancreatic carcinoma, in such cases, differential diagnosis by radiology is impossible. Even after operation, such differential diagnosis is not always possible macroscopically. The pneumoperitoneum is not always of practical value in the radiologic examination of pancreatic tumors. On the other hand, the technic described by Engel and Lyshold is of great practical importance in the radiologic study of diseases of the pancreas. Cholecystography is useful in tumors of the pancreas. However, radiologists agree that in some cases of pancreatic tumor, principally incipient carcinomas, radiologic examination does not provide a clear diagnosis, while in other cases it is unquestionably of practical value.

#### Diagnosis of Leprosy

The painful sensitivity of hypochromic and achromic patches occasionally presented in suspected or known cases of leprosy can be determined with a needle. According to studies carried out by Drs Marino Bechechi and Novo Pacheco of São Paulo, when the patches were anesthetic and of leprotic origin puncture did not cause appearance of the reflex and diffuse erythema representing the second stage of the Lewis triplex reaction observed when the skin is submitted to an irritation (Lewis's triplex reaction third phase papula). Afterward, continuing their investigation, the authors made the histamine tests on the same patches, and the same results were obtained: absence of reflex erythema in the dychromic leprotic patches and presence of reflex erythema in the bordering normal skin. (The reflex erythema is large and more persistent with histamine than with the puncture alone.) Simple needling alone caused the appearance of reflex erythema within vitiliginous patches. Thus the procedure may be applied in the differential diagnosis of leprotic maculae. The authors studied the mechanisms of cutaneous reaction produced by needling and the reasons for its importance in the diagnosis of leprosy. They concluded that the reflex erythema depends on the integrity of the sensory nerves fibers, if these are involved in leprosy the reflex does not appear. It is from this fact that the diagnostic importance of the histamine test and the simple puncture is derived. Because of verifications obtained in several cases, the authors believe that a simple needling is significant in diagnosing the leprotic nature of peripheral anesthesia, moreover, this is a simple subsidiary means that may be applied by the clinician.

## Marriages

BELLFIELD ATCHESON, Appleton City, Mo., to Lieut. Genevieve LaBree at Camp Perry, Ohio, November 18.

MARGARET LILLIAN SAMPSON to Rev Jarrett Wood Richardson Jr, both of Louisville, Ky, October 2.

WILLIAM OWEN ARNOLD to Miss Sarah Weaver, both of State Sanatorium, Ark., October 7.

JAMES ALAN READ, St Louis, to Miss Peggy Westbrook at Paragould, Ark., October 10.

ROBERT ALLEN CLARK to Miss Jane E Bancroft, both of Rochester N Y, November 6.

IRA MILTON MILLER to Miss Jennie S Hardison, both of Yakima, Wash., October 2.

JAMES STEPHAN REYNOLDS to Miss Polly Ann Wolfe both of Gary, Ind., October 20.

ROBERT ALBERT ARENS to Mrs Rosella Humble, both of Chicago, November 2.

FRED EUGENE HAMLIN to Miss Helen Betelle, both of Roanoke, Va., October 9.

BENJAMIN F ROACH, Midway Ky to Miss Ruth Slack at Atlanta, Ga., recently.



## Deaths

**George Adams Leland Jr** ☉ Brookline, Mass., Harvard Medical School, Boston, 1911, associate in surgery at his alma mater, specialist certified by the American Board of Surgery and a member of the founders group, member of the American Surgical Association, New England Obstetrical and Gynecological Society, New England Surgical Society, American Society for the Control of Cancer, New England Cancer Society and the New England Röntgen Ray Society, fellow of the American College of Surgeons, commissioned a lieutenant in the medical reserve corps of the U S Army during World War I, assigned to Base Hospital number 6 in 1917, commissioned a captain in the medical reserve corps in 1918 and detailed to Base Hospital number 220 with rank of commanding officer honorably discharged in 1919, decorated Officer d'Academie of Public Instruction and Fine Arts by the French government, consulting surgeon to the Addison Gilbert Hospital, Gloucester, Massachusetts Eye and Ear Infirmary, Boston, and the New Hampshire Memorial Hospital, Concord, visiting surgeon to the Collis P. Huntington Memorial Hospital, Massachusetts General Hospital and the Palmer Memorial Hospital, Boston, where he died September 22, aged 57, of coronary artery atherosclerosis.

**Marshall Clinton**, Bluff City, Tenn., Niagara University Medical Department Buffalo 1895, professor of surgery, emeritus, at the University of Buffalo School of Medicine, member of the Medical Society of the State of New York, Association of Military Surgeons of the United States, American Surgical Association, Buffalo Academy of Medicine and the International Surgical Society, fellow of the American College of Surgeons, veteran of the Spanish-American War, served as assistant surgeon with the rank of captain, 65th Regiment, New York National Guard during World War I, served as consulting surgeon with the 35th division, as chief surgical consultant of the First and Second Army of the American Expeditionary Forces and director of Buffalo Base Hospital number 23, commissioned a major in the medical reserve corps on June 12, 1917 and a lieutenant colonel on June 6, 1918, cited by General Pershing for exceptionally meritorious and conspicuous services, formerly consulting surgeon at the Children's Hospital and the Buffalo City Hospital, attending surgeon at the Buffalo General Hospital, the Sisters of Charity and Erie County hospitals, all of Buffalo, surgeon for the Pennsylvania Railroad, died September 3, aged 70, of coronary thrombosis.

**Eugene Leroy Horger** ☉ Columbia, S. C., University of Maryland School of Medicine, Baltimore, 1914, associate in psychiatry at the Medical College of the State of South Carolina, Charleston, for three years lecturer on mental disorders at the University of South Carolina, Columbia, specialist certified by the American Board of Psychiatry and Neurology, Inc., past president of the Columbia Medical Society, member of the Southern Psychiatric Association and the American Psychiatric Association, fellow of the American College of Physicians, a member of the medical advisory board of districts two and six during World War I, neuropsychiatric examiner at the South Carolina State Penitentiary, attending specialist in neuropsychiatry at the Veterans Administration Facility, clinical director and assistant superintendent of the South Carolina State Hospital, at one time director and vice president of the Columbia Rotary Club, formerly an associate editor of the *Journal of the South Carolina Medical Association*, a director of the Boys Scout Council and the Travelers' Aid, died suddenly October 22, aged 54, of coronary thrombosis.

**August Stephen Astor Thomen** ☉ New York, University and Bellevue Hospital Medical College, New York, 1918, attending physician to the allergy clinic, Cornell University and the New York Hospital from 1920 to 1927, director of the allergy clinic, New York University College of Medicine, from 1927 to 1935 and lecturer in medicine from 1925 to 1935, fellow of the New York Academy of Medicine, member of the Society for the Study of Asthma and Allied Conditions, American Association for the Advancement of Science, American Association for Adult Education, co-author of "Asthma and Hay Fever in Theory and Practice," 1931, author of "Hay Fever: A Study in Applied Botany," 1933, "Don't Believe It! Says the Doctor," 1935, and "Doctors Don't Believe It—Why Should You?" 1941, died suddenly September 11, aged 51, of heart disease.

**Simeon Alphonse Daudelin**, Worcester, Mass., School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, Que., Canada, 1895, member

of the Massachusetts Medical Society, in 1907 appointed by President Theodore Roosevelt as high commissioner and plenipotentiary from the United States to France for a period of six months, covering the Maritime Exposition, the French government conferred on him the decoration of the Legion of Honor, at one time medical inspector in the schools, formerly chairman of the city board of health and trustee of Worcester Public Library, on the staff and at one time trustee of the Belmont Hospital, died in the Hopital Notre-Dame, Montreal, Que., Canada, August 28, aged 73, of cerebral hemorrhage.

**Carl Barck** ☉ St. Louis, Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1881, Affiliate Fellow of the American Medical Association, assistant professor of medicine at the University of Basel, Switzerland, 1881-1882, professor of ophthalmology at the Marion-Sims College of Medicine from 1891 to 1903, professor emeritus of ophthalmology since 1922, professor of ophthalmology from 1903 to 1922 and director of the department from 1911 to 1922, St. Louis University School of Medicine, on the staffs of St. Louis City, Lutheran and St. John's hospitals, died in Columbia, Mo., October 2, aged 86, of diabetes mellitus and gangrene.

**William Truitt Godfrey** ☉ Stamford, Conn., Cornell University Medical College, New York, 1907, fellow of the American College of Surgeons, served as chairman of the board of education, a director of the First Stamford National Bank and Trust Company, formerly a member of Company C, Twelfth New York National Guard Regiment, veteran of the Spanish American War, a member of the National Defense Council of the American Red Cross, physician in charge of the Tophassee Grange, on the consulting staff of St. Joseph's Hospital and on the surgical staff of the Stamford Hospital, where he died September 4, aged 71, of reticulum cell sarcoma.

**Frederick Conrad Narr** ☉ Kansas City, Mo., University of Pennsylvania School of Medicine, Philadelphia, 1911, member of the American Association of Pathologists and Bacteriologists and the American Society of Clinical Pathologists, specialist certified by the American Board of Pathology, Inc., technical director of the blood donor service, American Red Cross, in Kansas City, formerly assistant instructor in pathology at his alma mater, director of the William Volker Clinic and the laboratory of the Research Hospital, where he died September 2, aged 55, of adenocarcinoma of the rectum, neuritis and ulcerative colitis.

**Stephen Charles Markley**, Richmond, Ind., Medical College of Ohio, Cincinnati, 1898, member of the Indiana State Medical Association, past president of the Wayne County Medical Society, formerly coroner of Wayne County, served with the American Expeditionary Forces in France during World War I, lieutenant colonel in the medical reserve corps of the U S Army not on active duty, served as president of the board of managers of the Smith-Esteb Memorial Hospital, president and for many years secretary of the staff of the Reid Memorial Hospital, where he died August 28, aged 70, of cerebral hemorrhage.

**Dana Byron Dana** ☉ Kewaunee, Wis., Northwestern University Medical School, Chicago, 1910, served as a lieutenant in the medical corps of the U S Army during World War I, for many years acting assistant surgeon in the U S Public Health Service, Coast Guard physician, medical superintendent and part owner of the Dana and Witcopalek Hospital, surgeon for the Ann Arbor and Kewaunee, Green Bay and Western railroads, director of the Kewaunee Shipbuilding and Engineering Company and vice president of the Kewaunee Manufacturing Company, died suddenly September 19, aged 56, of coronary occlusion.

**John Lanahan Dorsey** ☉ Baltimore, Johns Hopkins University School of Medicine, Baltimore, 1918, specialist certified by the American Board of Internal Medicine, member of the Southern Medical Association, fellow of the American College of Physicians, captain in the medical corps of the U S Army during World War I, instructor in medicine at his alma mater, on the staffs of the Church Home and Infirmary, Hospital for Women, Union Memorial Hospital and the Johns Hopkins Hospital, where he died September 15, aged 49, following an operation for brain tumor.

**Robert Abe Burns**, Alabama City, Ala., Vanderbilt University School of Medicine, Nashville, Tenn., 1901, member of the Medical Association of the State of Alabama, veteran of the Spanish-American War, cited for bravery in action by General Pershing during World War I, served in the Army of Occupation in Germany, formerly mayor of Alabama City, police commissioner of Gadsden, a member of the county jury



commission, chief medical adviser for the state prison and warden of Killy Prison, died September 2, aged 76, of cerebral hemorrhage

**William Francis Beer**, Salt Lake City, Columbian University Medical Department, Washington D C, 1892, member and an honorary president of the Utah State Medical Association, past president of the Salt Lake County Medical Society, major in the medical reserve corps of the U S Army not on active duty, served during World War I in 1896 joined the Utah National Guard formerly on the staff of Dr W H Groves Latter-Day Saints Hospital, died in the Providence Hospital Oakland Calif, August 11, aged 76, of bronchopneumonia

**Rose Amanda Ralston Ackley**, Warren Ohio, Cleveland University of Medicine and Surgery 1896 member of the Ohio State Medical Association, died in Saltsburg, Pa, September 25 aged 83

**Ross Uriah Adams** & Kalamazoo, Mich Detroit College of Medicine, 1907, served overseas during World War I formerly county physician died September 30 aged 60, of cerebral hemorrhage

**Charles Adler** & New York, University and Bellevue Hospital Medical College, New York, 1912 died in the Mount Sinai Hospital September 11, aged 68

**George William Anderson**, Earl Iowa State University of Iowa College of Homeopathic Medicine Iowa City, 1901 for many years president of the Earl Bank and of the school board died in Spencer September 2 aged 71, of cerebral embolism

**Merchant Ellsworth Austin**, Krotz Springs, La Bennett College of Eclectic Medicine and Surgery, Chicago, 1906 died September 20, aged 75, of heart disease

**Louis Dominic Bacigalupi**, San Francisco University of California Medical Department, San Francisco, 1896 necropsy surgeon of San Francisco from 1901 to 1905 on the staff of St Francis Hospital, died September 17 aged 68, of bronchiogenic carcinoma

**George Silas Barksdale**, Fernbank Ala Memphis (Tenn) Hospital Medical College, 1899 member of the Medical Association of the State of Alabama, president of the Lamar County Medical Society examiner for several insurance companies died September 18 aged 70

**Dempsey Barnes** & Asheboro, N C Medical College of Virginia Richmond, 1925, past president of the Randolph County Medical Society, served during World War I, member of the Randolph County School Board part owner and medical director of the Barnes-Griffin Clinic on the staff of the Randolph Hospital, died in the Duke Hospital, Durham, N C, September 9 aged 46 of uremia and terminal nephritis

**Ruben B Baugh**, Polkville, Miss Memphis (Tenn.) Hospital Medical College 1898, served at various times as health officer of Smith County member of the county Selective Service System during World War I and recently, member of the staff of Scott County Hospital, Morton died September 1, aged 65, of coronary occlusion

**Oscar R Beard**, Sharon Tenn University of Louisville (Ky) Medical Department, 1892 died September 11, aged 74, of coronary thrombosis

**Clinton G Beckett**, Danville, Ill Medical College of Indiana Indianapolis, 1905 member of the Illinois State Medical Society served during World War I formerly on the staffs of various Veterans Administration facilities, died September 18, aged 68, of acute cardiac dilatation

**Harry Jacob Bell** & Dawson, Pa Medico-Chirurgical College of Philadelphia, 1892, fellow of the American College of Physicians formerly state senator and coroner served as examiner for several insurance companies died in the Connelville State Hospital September 30 aged 75

**Julius Samuel Berkman**, Rochester N Y University of Buffalo School of Medicine 1898 for many years physician at the Monroe County Penitentiary, died September 8, aged 67 of poison, self administered

**J Morgan Berry**, Leitchfield Ky, Vanderbilt University School of Medicine Nashville Tenn. 1882 died August 16, aged 83 of myocarditis

**Cheves Bevell**, Waldron, Ark (licensed in Arkansas in 1903), member of the Arkansas Medical Society for many years served as a member of the state board of health formerly mayor of Waldron and a member of the state legislature died August 28 aged 94

**Thomas Eugene Bland**, Shelbyville Ky University of Louisville Medical Department 1892 member of the Kentucky

State Medical Association, formerly mayor of Shelbyville and member of the city council, died September 25 aged 79

**James F Bohannon**, Louisville, Ky, Hospital College of Medicine, Louisville, 1897, died in the Methodist Deaconess Hospital September 10, aged 72

**Cord Bohling** & Sedalia, Mo, Missouri Medical College, St Louis, 1888, past president of the Pettis County Medical Society, at one time a representative in the General Assembly for Morgan County, on the staff of the John H Bothwell Memorial Hospital member of the chamber of commerce and a director of the Third National Bank, died September 11, aged 80

**Harold Lynn Bottomley** & Philadelphia, Temple University School of Medicine, Philadelphia, 1919, died August 25, aged 47, of acute coronary artery occlusion and hypertension

**Benjamin Isaac Brody**, Detroit, Western Reserve University School of Medicine, Cleveland, 1913, died September 18, aged 57

**Benjamin Joseph Butler**, East Providence R I, University of Vermont College of Medicine, Burlington, 1903, served during World War I died September 18, aged 69, of heart disease

**Roscoe William Cahill**, Boise, Idaho, University of Oregon Medical School, Portland, 1913, served during World War I, major, medical corps, Army of the United States, not on active duty, chief, surgical service, Veterans Administration Facility, where he died September 1, aged 55, of coronary infarction

**Matthew Corbett**, Chicago College of Physicians and Surgeons of Chicago, 1890, member of the Illinois State Medical Society, died September 12, aged 80, of chronic myocarditis

**Benjamin Courshon**, Sioux City, Iowa, Atlanta College of Physicians and Surgeons, 1901, member of the Iowa State Medical Society, for thirty-two years city physician died September 13, aged 75, of uremia

**Phillip H Dalby**, Ramona Okla, Kansas City (Mo) Medical College, 1898, died September 28, aged 90, of senility

**Otho Lee Dascombe** & Waltham, Mass, Johns Hopkins University School of Medicine, Baltimore, 1905 served during World War I on the staff of the Waltham Hospital, where he died September 26, aged 62, of Hodgkin's disease

**Albert Mitchell Dawson** & Bellingham, Wash University of Minnesota College of Medicine and Surgery, Minneapolis, 1905 died in St Joseph's Hospital September 18 aged 71

**Arthur Clarence Devere**, Austin Texas University of Vermont College of Medicine Burlington, 1898, died September 14, aged 74, of heart disease

**John Richard Drake**, Memphis, Tenn, University of Louisville (Ky) Medical Department, 1911, school physician for the Memphis and Shelby County Health Department, formerly police surgeon, served on the Mexican border as a captain of the First Tennessee Ambulance Company in 1916 and during World War I in France with the 166th ambulance company and the Rainbow Division, died September 21, aged 57, of cardiac embolus due to hypertension

**James F Dundas**, Minden City Mich, Western University Faculty of Medicine London, Ont., Canada, 1899 on the advisory board, Hubbard Memorial Hospital Bad Axe, where he died September 12, aged 75

**Walter Branham Emery**, Atlanta Ga Atlanta College of Physicians and Surgeons, 1899, member of the Medical Association of Georgia past president and secretary of the Fulton County Medical Society, past president of the Georgia Urological Association, formerly clinical lecturer on genitourinary diseases at the Atlanta School of Medicine and associate professor of surgery (syphilology) at the Emory University School of Medicine, died in San Francisco September 7 aged 67 of peritonitis following an abdominal operation

**Henry Fisher**, Philadelphia Medico Chirurgical College of Philadelphia, 1883 member of the Medical Society of the State of Pennsylvania formerly professor of materia medica and pharmacology at the Temple University School of Medicine and the school of pharmacy, at one time professor of materia medica botany and pharmacology and trustee at his alma mater served on the staffs of the Medico-Chirurgical Germantown and Temple University hospitals, died September 18 aged 86

**Patrick Henry Fleming** & St Martinville La Medical Department of Tulane University of Louisiana, New Orleans 1911 served in the medical corps U S Army, in France and Germany during World War I formerly mayor of St Martin-

ville, director of St Martin Parish Health Unit, acting director of the Iberia Parish Health Unit, died in a New Iberia hospital September 29, aged 53

**Joseph Freston**, Danville, Va., College of Physicians and Surgeons, Baltimore, 1886, died September 9, aged 76

**Herbert Milton Friedlander** \* Washington, Pa., University of Cincinnati College of Medicine, 1928, member of the American Academy of Dermatology and Syphilology, on the staff of the Washington Hospital, died August 27, aged 42, of coronary thrombosis

**Thomas Douglas Joseph Gallagher**, North Arlington, Va., University of Pennsylvania Department of Medicine Philadelphia, 1900 died August 4, aged 80, of senility

**William Melvin Gamble**, Wetumpka, Ala., Louisville (Ky.) Medical College, 1887, member of the Medical Association of the State of Alabama, past president of the Elmore County Medical Society, died August 31, aged 77

**Simon Sims Garrett**, Duncan, Okla., University of the South Medical Department, Sewanee, Tenn., 1907, member of the Oklahoma State Medical Association, county superintendent of public health, died August 9, aged 71, of pernicious anemia

**Andrew James Gifford**, Alexandria, S. D., State University of Iowa College of Medicine, Iowa City, 1901, member of the South Dakota State Medical Association, member of the city board of education for many years health officer of Hanson County, formerly physician for the local draft board, died in the Methodist State Hospital, Mitchell, September 14 aged 72, of cirrhosis of the liver

**George Robert Gowen**, Walla Walla Wash., Southwestern Homeopathic Medical College and Hospital, Louisville Ky., 1909, specialist certified by the American Board of Otolaryngology, member of the Washington State Medical Association American Academy of Ophthalmology and Otolaryngology and the Pacific Coast Oto-Ophthalmological Society, past president of the Walla Walla Valley Medical Society, on the staffs of the Walla Walla Sanitarium and Hospital and St Mary's Hospital, died September 2, aged 61

**Otto Edward Haisch** \* Dubuque, Iowa, Keokuk Medical College, College of Physicians and Surgeons, 1905, past president of the Dubuque County Medical Society, a member of the Selective Service System as examining physician for the Dubuque County board number 1, on the staffs of the Finley Hospital and St Joseph Mercy Hospital, where he died September 23, aged 69, of coronary thrombosis

**Ellwood Harlow** \* New York, University and Bellevue Hospital Medical College, New York, 1899, formerly on the staffs of the Knapp Memorial Eye Hospital and the Vanderbilt Clinic, died September 22, aged 70, of heart disease

**Gaillard Hastings Healy**, Bay City, Mich., Michigan College of Medicine and Surgery, Detroit, 1897, member of the Michigan State Medical Society, associated with the Jones Clinic, chief internist at the Bay City Samaritan Hospital, where he died September 23, aged 66 of coronary thrombosis

**Noble J Hill**, Hindsville, Ark. (licensed in Arkansas in 1903), member of the Arkansas Medical Society, died September 1, aged 74

**Ferdinand Murdo Jeffries** \* New York Bellevue Hospital Medical College, New York, 1893 formerly professor of pathology and bacteriology at the New York Polyclinic Medical School and Hospital, formerly on the staff of the Hospital for Ruptured and Crippled, died in Pennington, N. J., September 4, aged 78, of heart disease

**George Boyden Jones** \* Lieutenant Colonel, U. S. Army, retired, San Francisco, Medical College of Indiana, Indianapolis, 1892, veteran of the Spanish-American War, Philippine Insurrection and World War I, commissioned a major in the medical corps of the U. S. Army in 1920, retired for disability in line of duty with rank of lieutenant colonel in August 1931, died in the Letterman General Hospital September 1, aged 75, of cerebral hemorrhage, subacute bacterial endocarditis, Streptococcus viridans, and general arteriosclerosis

**Haig Haigouni Kasabach**, New York, University of Michigan Medical School, Ann Arbor, 1926, assistant professor

of radiology at the Columbia University College of Physicians and Surgeons, specialist certified by the American Board of Radiology, Inc., member of the Medical Society of the State of New York, American Roentgen Ray Society, American College of Radiology and the American Radium Society on the staffs of the Presbyterian Hospital and the Vanderbilt Clinic, died in the Neurological Institute, September 1, aged 44

**Frederick Carl Emil Kuhlmann** \* Webster Groves, Mo., Washington University School of Medicine, St. Louis, 1896, formerly a surgeon in the U. S. Public Health Service reserve, colonel, medical reserve corps, U. S. Army, not on active duty, died in the Evangelical Deaconess Home and Hospital, St. Louis, of injuries received in an automobile accident, September 26, aged 72

**Charles Edward Lewis** \* Bell City, Mo., National University of Arts and Sciences Medical Department, St. Louis, 1916, died in the Southeast Missouri Hospital, Cape Girardeau, August 17, aged 66, of acute cholecystitis with obstruction of the common duct and chronic nephritis

**Andrew J Mitchell** \* Sharon, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1888, on the staff of the Christian H. Buhl Hospital, died August 22, aged 84, of coronary occlusion and arteriosclerosis

**Arthur W Moore**, Portland, Ore., University of Vermont College of Medicine, Burlington, 1883, member of the Oregon State Medical Society, past president of the Multnomah County Medical Society, one of the first members on the staff of St. Vincent's Hospital, died in the Portland Sanitarium and Hospital August 25, aged 88, of strangulated right inguinal hernia and hypostatic pneumonia.

**Esther Morgan**, Williamsport, Pa., Woman's Medical College of Pennsylvania, Philadelphia, 1906, for many years superintendent of the Dixie Hospital, Hampton, Va., and later pathologist at the North Hudson Hospital, Weehawken, N. J., died October 18, aged 70, of carcinoma of the colon

**Ashley Bennett Palmer**, Seattle, State University of Iowa College of Homeopathic Medicine, Iowa City, 1907, died in the Swedish Hospital August 15, aged 78, of myocarditis

**Charles Delmer Ralance** \* Denver, McGill University Faculty of Medicine, Montreal, Que., Canada, 1906, served overseas during World War I, at one time superintendent of the Jeffrey Hale's Hospital, Quebec, Que., Canada, on the staff of the Presbyterian Hospital, associate physician at the Mercy Hospital, examining physician for local board number 2, died August 15, aged 62, of heart disease.

**Frank John Walz**, Wilkinsburg, Pa., Jefferson Medical College of Philadelphia, 1896, member of the Medical Society of the State of Pennsylvania, died in the Hillview Sanitarium, Washington, August 2, aged 72, of cerebral hemorrhage, hypertension and Parkinson's disease

**John Marion Whitfield**, Panama City, Fla., University of Alabama School of Medicine, 1908, member of the Florida Medical Association, served during World War I, died in the Veterans Administration Facility, Montgomery, Ala., August 15, aged 66, of brain tumor

**Fritz Carl Yeck**, Meredosia, Ill., Rush Medical College, Chicago, 1903, died August 11, aged 68

## KILLED IN ACTION

**Ben Richard Bronstein**, Manchester, N. H., Tufts College Medical School, Boston, 1940 diplomate of the National Board of Medical Examiners, on the resident staff of the Elliot Hospital lieutenant (jg), medical corps U. S. Naval Reserve, a new vessel to be named in his honor, according to the Bureau of Medicine and Surgery died as a result of the torpedoing of the U. S. S. *Jacob Jones* off Cape May, N. J. Feb 28, 1942, aged 26, officially declared deceased by the Navy Department March 5, 1942



LIEUT. (JG) BEN R. BRONSTEIN,  
(MC), U. S. N. R., 1915-1942

## Correspondence

### "HOPE (FALSE) FOR THE VICTIMS OF ARTHRITIS"

To the Editor —Paul de Kruijf's enthusiastic article in this month's *Reader's Digest* entitled "Hope for the Victims of Arthritis" might better have been called "False Hope for the Victims of Arthritis."

Since its publication I have had many inquiries from all parts of the United States both from physicians and from patients with arthritis. Dr. de Kruijf's paper concerns Ertron, a vitamin D preparation manufactured by the Nutrition Research Laboratories, Chicago, and reviews a report of Dr. R. Garfield Snyder, who for the past six years has conducted a study of this in various forms of arthritis.

The objection which I have to the article in the *Reader's Digest* is that it stimulates great hope in the minds of patients with arthritis for a therapeutic agent of uncertain, if of any, permanent value, which is quite expensive and the manufacturers of which have carried on a most intensive advertising campaign while the preparation is still on trial.

Also it states that "The treatment is now also under test by Dr. Paul Magnuson at Chicago's Northwestern University, at Columbia University in New York under Dr. Ralph Boots, and by Dr. R. H. Freyberg at the University of Michigan. It is spreading rapidly into medical practice."

Dr. de Kruijf did not ask either Dr. Freyberg's or my opinion regarding our results. Reports have already been published from Dr. Freyberg's clinic, as well as from our own, concerning Ertron. Dr. Freyberg is certainly unenthusiastic concerning its value (Freyberg, R. H. "Treatment of Arthritis with Vitamin and Endocrine Preparations. Emphasis of Their Limited Value," *THE JOURNAL*, Aug. 8, 1942, p. 1165). He states: "Of the many newer forms of treatment for chronic arthritis, one of the most highly advertised is treatment with massive doses of vitamin D. I know of no rationale for such therapy" and "Results of this entire study of vitamin D therapy are certainly far from impressive of great value in this form of treatment! It is beneficial in only a minority of cases, although in some instances significant improvement occurred which could be explained only by the effect of vitamin D or a coincidental natural improvement. In the majority of cases improvement when it occurred was only symptomatic and temporary, seldom could the course of the disease be considered to be favorably altered. In view of these facts vitamin D in massive doses should not be used with a comfortable feeling that great benefit is certain to result."

Dr. Charles Ragan analyzed the results of Ertron treated rheumatoid arthritis patients in our clinic and gave these results as a discussion to Dr. Snyder's paper before the meeting of the American Rheumatism Association in June 1942 (*Ann Int Med* 19:128 [July] 1943). He stated: "At the Arthritis Clinic of the Presbyterian Hospital, New York, we had 31 cases. These patients were admittedly a difficult group of cases. Eighteen of the patients developed some toxic manifestations usually nausea and vomiting which promptly cleared after cessation of the treatment. As far as improvement goes we were struck by one feature of the drug, namely that 7 of the patients felt very much better. In only 1 patient could we see any objective signs of improvement. Seven showed a significant drop in sedimentation rate, 8 were probably improved but the result was not very striking. Sixteen showed no improvement at all. One remained well after he stopped the drug. The remainder relapsed immediately after the drug was discontinued."

Since 1942 we have continued this study with a very small group of patients who were unable to take gold therapy. We have relied for our treatment of rheumatoid arthritis on (1)

general care of patient, (2) rest, (3) gold therapy, (4) transfusions, (5) physical therapy, (6) climate, (7) cod liver oil. In my opinion there is probably no difference between Ertron and any other high dosage vitamin D preparations. The therapeutic value of such preparations remains unproved. Some of the patients definitely felt better while taking it, but this can also be said of cod liver oil, which is much less expensive and which we have recommended in our clinic for a number of years.

Whatever action you wish to take regarding this matter will be satisfactory to me, provided it emphasizes the fact that I certainly do not recommend Ertron as a cure for rheumatoid arthritis.

RALPH H. BOOTS, M.D., New York

To the Editor —The article in the November 1943 issue of the *Reader's Digest* entitled "Hope for the Victims of Arthritis," by Paul de Kruijf, has undoubtedly already been called to your attention. However, I am afraid that the average physician is not yet aware of the fact that the sales of vitamin D preparations to the layman have increased more than 500 per cent during the past few days. My experience as a pharmacist, which I took as premedical training, has made me fully realize the extreme danger that can be evolved from such liberal self-medication without proper control.

Already I have encountered complaints of nausea and slight diarrhea from some of these patients who, without seeking the proper advice of their family physicians, have resorted to self-medication with highly concentrated forms of vitamin D preparations.

It certainly seems advisable at present to forewarn the public of the possibility of hypervitaminosis D and its pathologic significance. The fact that the article stressed the product "Ertron" and not irradiated ergosterol seems, as one would expect, to have made only the impression of "vitamin D for arthritis" to the layman. This can readily be understood from the fact that several of the purchasers are illiterate, and word of mouth therapy has been indeed a headache to many a physician when the case finally reaches his attention.

The effect of erroneous interpretation of articles written for the layman by reputable authors who have, in their efforts to use simple language, neglected the accuracy of those articles has already been seen in the misuse of thyroid, benzedrine sulfate and the sulfonamide drugs. It would be highly advisable to place vitamin D concentrate forms on the "required prescription" list until the public has been made to understand the dangers involved from such self-medication without consulting their family physician.

NATHAN ROBERT SACHS,  
5916 Griswold Avenue,  
Cleveland

Medical Student, Ohio State University  
College of Medicine

### DERMATITIS DUE TO HAIR LACQUER AND NAIL POLISH (LACQUER)

To the Editor —Much interest has been aroused by the current reports of Dr. J. B. Howell and Dr. Stephan Epstein on dermatitis due to hair lacquer (*THE JOURNAL*, October 16) as well as by the communication of Dr. S. S. Greenbaum in which it was stated that a chemical analysis of the hair lacquer was being made. On communicating with Dr. Greenbaum I learned, as was to be expected, that a chemical study revealed little of real significance. Assuming that a complete analysis could be made, physical factors such as the presence of a wetting agent, might be important in enhancing the sensitizing power of the causative ingredient. This is one of the important principles learned in studying dermatitis due to resin finished shorts and fabrics (*Keil Harry J. Illness* 14:477 [Sept.] 1943).

Howell cited an example of dual hypersensitivity to hair lacquer and nail polish (which is essentially a lacquer) and he quoted a similar case reported by Downing. I should like to discuss this subject on the basis of 19 cases of nail polish dermatitis as well as 1 instance of hair lacquer dermatitis seen by me in April 1943. In most of these cases, including the one due to hair lacquer, I was able to use patch tests with a wide variety of substances as well as with the resin that is the actual cause of nearly all instances of nail polish dermatitis as seen today.

Much has been erroneously surmised about the cause of nail polish dermatitis. The first important advance was made by Simon (Nail Polish Eczema, *South M J* 36 157 [Feb] 1943), who recorded 7 examples of this condition in which hypersensitivity to "formaldehyde sulfonamide resin" was present. At the time this paper was published I had just made tests in a case of this condition with a variety of resins, the only significant positive reaction had been produced by a specimen of melamine-formaldehyde resin. On reading Simon's paper I investigated the matter and discovered that my specimen of melamine-formaldehyde resin actually also contained some p-toluene sulfonamide formaldehyde resin. Thus, what seemed at first to be an interesting group reaction turned out to be a fairly specific positive reaction. I have now studied 19 cases of nail polish dermatitis from this point of view and, except for 1 instance, all have been found to show hypersensitivity to p-toluene sulfonamide formaldehyde resin. Furthermore, I have been able to prove, without a direct chemical analysis, that this same resin exists in a particular straw hat lacquer, and one such example under my care is now pending before the workmen's compensation board for disability produced by contact with this substance. The subject may possibly assume even greater importance when it is realized that patients are being sensitized to a material derived in part from a compound that is chemically similar to sulfanilamide. There is no direct proof of this as yet, but it is interesting that, in 10 cases of nail polish dermatitis in which hypersensitivity to p-toluene sulfonamide formaldehyde resin was present, hypersensitivity also to p-toluene sulfonamide was present in 5. There are many other points of interest revealed by such studies with the patch test, but these will be discussed elsewhere.

In connection with my case of dermatitis due to hair lacquer I had the opportunity of patch testing this patient with a number of resins. While there were mild reactions to two varieties of nail polish, the negative responses to p-toluene sulfonamide formaldehyde resin and a straw lacquer known to contain this substance proved beyond doubt that this resin was not the cause of the dermatitis in this case. There were positive reactions to a "polymerized wood resin" and to an alkyl resin as well as a mild reaction to a dibasic terpine resin. The chief point is that this patient was not hypersensitive to p-toluene sulfonamide formaldehyde resin, the principal cause by far of nail polish dermatitis as seen today. The patient was unable to ascertain the name of the manufacturer of the hair lacquer. An editorial in *THE JOURNAL*, October 9, refers to an unidentified "new gum" as having been incorporated in the hair lacquer, whereas Howell was told that there were two synthetic resins. It must be noted that the terms gum and resin refer to entirely different classes of substances, although these terms are sometimes used erroneously as synonymous names. I make this point because the toluene sulfonamide formaldehyde resin has been used in straw lacquers under the designation of a "gum." My suggestion is that patients with hair lacquer dermatitis be tested with p-toluene sulfonamide formaldehyde resin (20-30 per cent in acetone) in order to eliminate this substance as an etiologic factor in these instances. Should the test be positive, this would go far toward elucidating the nature of the cause.

Lacquers of numerous types are exceedingly important commercial materials, extensively used in the war effort. Their formulas are complex and often variable. In some instances patch testing will yield valuable clues but without the cooperation of the manufacturer it is wise to be cautious in drawing precise conclusions. What is true of one lacquer may not necessarily hold for another or even for another specimen of lacquer manufactured at some subsequent time by the same concern. Where dermatitis due to a product reaches epidemic proportions, the cause is likely to be found in one ingredient, but it must be remembered that with such complex materials other ingredients may prove to be the sensitizer in occasional instances. Moreover, physical factors may be present to explain the enhanced sensitizing power of such materials. The manufacturer should be fully familiar with the sensitizing potentialities of the substances incorporated in his product and of the product as a whole.

HARRY KEIL, M D, New York.

### SICKNESS, NOT HEALTH, INSURANCE

*To the Editor*—Permit me to urge on you the merit of using wherever possible in the field of "social insurance" the term sickness insurance and avoiding the term health insurance.

In the November 6 issue of *THE JOURNAL*, page 634, in the Statement of General Policies by the Council on Medical Service and Public Relations, under item 4 is the following:

"The Council approves voluntary prepayment medical service under the control of the state and county medical societies in accordance with the principles adopted by the House of Delegates in 1938.

"The medical profession has always been strongly opposed to compulsory health insurance because (1) "

It will add strength to our position and argument if we stick to the honest and correct term sickness insurance as used throughout the continental nations of Europe, meaning insurance to meet the cost of sickness (institutional or medical), sickness as an actuarially calculable hazard can be insured against so far as its cost (for diagnosis and treatment) and for indemnity purposes are concerned.

Health insurance was the name given to the English system as a political sales term by Lloyd George to catch the labor vote, befog the issue and give an appearance of having some thing more than or other than insurance to provide for care of sickness. Health is not an insurable risk, as has been pointed out by honest actuaries, because even a physician cannot contradict the person who says he or she is sick, at least not in a practical sense.

Health insurance as a political slogan is adopted by the dogooders, the social welfare promoters, the salesman of New Dealism and "social security."

If in all our arguments and public statements we bring the subject down to earth and speak of sickness insurance, we shall strengthen our position and reduce the loose talk of "health insurers" to absurdity.

We oppose compulsion but encourage the thrifty use of insurance to meet the hospital costs of sickness by voluntary plans. We encourage prepayment plans under medical auspices to meet the cost of professional services (preventive, diagnostic and therapeutic). These are voluntary sickness or medical service plans. They are not health insurance.

Pardon my insistence on the point with which I believe you entirely agree. In preparing to beat the Wagner-Murray-Dingell bill and similar legislation, we must tell the people that it compels them into sickness insurance and is in no honest respect a measure which will contribute to health promotion or protection.

HAVEN EMERSON, M D Minneapolis

COMMENT—The editor entirely agrees!—Ed

**Medical Examinations and Licensure****COMING EXAMINATIONS AND MEETINGS****NATIONAL BOARD OF MEDICAL EXAMINERS  
EXAMINING BOARDS IN SPECIALTIES**

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Nov 20 page 789

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**Bureau of Legal Medicine  
and Legislation****MEDICOLEGAL ABSTRACTS**

Medical Practice Acts Revocation of License Issued Without Examination to Applicant Not Licensed Elsewhere—Goldsmith emigrated from Germany to the United States in 1926, when he was 34 years old. Prior to his entry here 'he had academic education and received advanced degrees' After arriving here "he studied for the medical profession and was engaged in medical research under practicing medical specialists and in connection with medical institutions" He attended the medical schools of New York, Yale and Columbia universities, failing "in his examinations" in New York and Yale In 1932 he became a citizen of the United States and thereafter went abroad, attending the medical school of the German University of Prague, Czechoslovakia, which, according to the reported opinion, "is one of excellent standing" and from which he received the degree of doctor of medicine in 1937 He did not, however, receive a license to practice in Czechoslovakia He then returned to the United States and in 1938 moved to New Hampshire, where he was licensed without examination to practice medicine under the provisions of New Hampshire medical practice act which authorizes the issuance of a license without examination to a person

legally qualified to treat human ailments or practice medicine in any state or country whose requirements the board deems equal to those in this state (Public Laws 1926 C 204 §13)

Later, acting in apparent reliance on another section of the medical practice act, which authorizes the revocation of a license obtained "by fraudulent means the board of medical examiners of New Hampshire, after notice and hearing revoked Goldsmith's license, finding that (1) Goldsmith had obtained his license "by deliberately and fraudulently misleading the board with respect to his full medical qualifications and (2) if it "had known at the time of application what it knows now about his medical scholarship and experiences as a result of the evidence in this case, it would not have granted him a license without examination Goldsmith then instituted before the superior court, Merrimack County, N H, proceedings for certiorari The superior court transferred to the Supreme Court of New Hampshire Merrimack, without ruling certain questions involved in the proceedings

The application for a license without examination it was charged filed by Goldsmith was fraudulent because (1) Goldsmith failed in filling out a portion of the application entitled "Medical Education" to make reference to the fact that he had attended New York and Yale universities and had failed in examinations in their respective medical schools and (2) Gold-



smith had stated in the application that he had been "examined and licensed" in Czechoslovakia, when in fact no license had there been issued to him. In determining whether or not Goldsmith's license was obtained by fraudulent means, said the Supreme Court, we must bear in mind that the medical practice act in this connection requires the fraud to be causal. If fraud was practiced but was of no efficiency in obtaining the license, a condition of the statute for revocation of the license was not met. The court did not believe that there was any evidence before the board on which there could be based a reasonable conclusion of causal fraud in obtaining the license.

With respect to the charge that Goldsmith's application was fraudulent because of the statement that he had been examined and licensed in Czechoslovakia, continued the court, the only pertinent evidence before the board was that a degree in medicine obtained at Prague conferred on citizens of Czechoslovakia the legal right to a license to practice in that country, and that because Goldsmith was not a citizen of Czechoslovakia a special permit was needed, as a formality, and with no question of his medical qualification, but Goldsmith never applied for that special permit. Goldsmith's application for a license in New Hampshire and an appendix accompanying it as a certified translation of various documents disclose that Goldsmith's statement in the application of having been licensed was clearly qualified by setting forth the fact that no license had been issued and the reason why. One requirement of the application was to furnish a "Certified Copy of State or National Board License or Certificate." Goldsmith wrote after this item "is enclosed, translation." The translation of the document which conferred the degree of doctor of medicine on Goldsmith contained the following:

Being an alien, the holder renounces the right to practice medicine within the territory of the Czechoslovakian Republic. He is not entitled to practice medicine in said territory unless he secure a special permit to practice medicine in accordance with section 6 of the law as of June 28, 1929.

Goldsmith's failure to furnish a certified copy of a foreign license was self evident and the reason for the failure definitely explained. The application and appendix thus showed the inaccuracy, considered alone by itself, of the statement of having been licensed, and the statement of the facts amounted fairly to a correction of the inaccuracy. An intent to mislead by the statement of having been licensed cannot fairly be found, and this charge of fraud must be rejected as a basis for revoking the license.

With respect to the charge of fraud in that Goldsmith failed to state the fact that he had failed in examinations in New York and Yale universities, said the court if it can be found that Goldsmith intended to mislead the board by that omission the conclusion that the board was in fact misled is altogether problematic. The omission fairly could be only of minor significance. The failures in examinations could only negligibly detract from his subsequent record as a student and from his experience in research work. The failures occurred early in his study of medicine and within four years after his emigration to this country. If not altogether negative in their bearing on his educational fitness to practice, his later studentship for a period of four or five years, and his incidental research work throughout his course of preparation, were subjected to no criticism.

The court believed that much irrelevant evidence was received at the hearings, such as evidence relating to Goldsmith's skill and conduct in the practice of his profession since his licensing. This evidence, said the court, was apparently received as having some bearing on the charge of fraud in the application, but it could have had none on the question of the causal quality of the alleged fraud. The only charge on which the revocation could be based is of fraudulent means in obtaining the license. The success of the means, which related only to scholarship, could not, under any test of logical relevancy, be proved by evidence of insufficiency of attainments in skill and ethics revealed after the issue of the license.

While the board of medical examiners, said the court, is a body of experts, the issue of causal fraud is to be resolved as an ordinary question of fact with no application of expert or special knowledge. Evidence from which a rational inference sufficient to warrant a finding of probability rather than of mere possibility was required. Evidence to have probative value must be relevant under principles of logic to support a conclusion drawn from it. As no sufficient evidence was presented to establish causal fraud, the order of revocation on the ground of fraud was not rightfully made.

The court concluded, however, that the board should not be compelled to restore a license to Goldsmith. If Goldsmith, said the court, was not "legally qualified" to practice medicine in some other state or country under the standard required by the medical practice act, the board was without power in the first instance to license him without examination and if it did so it acted ultra vires. If the original license was granted to Goldsmith without authority, it was void, and no injustice is done to Goldsmith by its revocation on other grounds. It therefore becomes decisive to construe the words "legally qualified" as they appear in the New Hampshire medical practice act. The applicable Czechoslovakian law does not permit the issue of a license to a foreigner unless there was a treaty between the country of which he was a citizen and Czechoslovakia relating to the rights of the nationals of either country to practice medicine in the other country. The court then quoted from a letter written by Cordell Hull, secretary of state, dated May 27, 1943 to the effect that there was not in force nor had there ever been in force between the United States and Czechoslovakia any treaty containing provisions relating to the rights of the nationals of either country to practice medicine in the other country. If, said the court, it might be held that the requirement that an applicant be legally qualified to practice elsewhere is not so insistent as to call for literal compliance with details of merely formal and ministerial observance, so that legal qualification to practice elsewhere may fall short of actual permission to practice there, yet here the lack of a treaty creates an absolute legal disqualification. Although the plaintiff was professionally qualified to practice in Czechoslovakia, and hence in this state, in the absence of a treaty it was illegal for him to practice there, and utter illegality or lack of legal right is not within full legal qualification. To be "legally qualified," under a fair construction of the medical practice act, one must have at least a substantive and practical right in addition to the possession of professional attainment, otherwise the word "legally" would be surplusage. Equivalence of professional standards is not enough. An insurmountable bar of the right to practice in Czechoslovakia existing, Goldsmith is barred from a license here without successfully passing an examination. No conditions on which he may practice there have been established. An essential condition of legality without examination is missing.

Accordingly, the court, in effect, refused to set aside the order of the board revoking Goldsmith's license to practice—*Goldsmith v Kingsford*, 32 A (2d) 810 (N H, 1943).

## Society Proceedings

### COMING MEETINGS

- American Society of Anesthetists, New York Dec 9 Dr McKinnie L. Phelps 745 Fifth Ave New York 22, Acting Secretary
- Annual Forum on Allergy, St Louis Jan 22-23 Dr Jonathan Forman 394 East Town St, Columbus, Ohio
- Association for Research in Nervous and Mental Diseases New York Dec. 17-18 Dr Thomas E. Bumford Jr, 115 East 82d St., New York 28, Secretary
- Eastern Section American Federation for Clinical Research, New York Dec 4 Dr Charles H. Wheeler, 345 East 68th St New York Acting Secretary
- Seaboard Medical Association Richmond Va, Nov 30 Dec. 2 Dr Clarence P. Jones 3117 West Avenue Newport News, Va, Secretary
- Society for the Study of Asthma and Allied Conditions New York Dec 4 Dr W. C. Sprun, 116 East 53d St, New York, Secretary
- Southern Surgical Association New Orleans, Dec 7-9 Dr Altier Ochsner, 1430 Tulane Ave, New Orleans, Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 15 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

### American Heart Journal, St. Louis

26 291-434 (Sept.) 1943

Absence of Conspicuous Increments of Venous Pressure After Severe Damage to Right Ventricle of Dog with Discussion of Relation Between Clinical Congestive Failure and Heart Disease. I. Starr, W. A. Jeffers and R. H. Meade Jr.—p. 291

\*Tetralogy of Fallot. I. Feigin and J. Rosenthal—p. 302  
Myocardial Infarction Indicated by Electrocardiographic Pattern in Which T<sub>1</sub> is Lower than T<sub>2</sub>. Report of 45 Cases. W. Dressler—p. 313

Effects of Various Sulfonamide Drugs on Electrocardiogram of Dog. Roberta Haffkesbring, Esther M. Creinheimer and Grace E. Wertinberger—p. 333

Basal Weight Level in Treatment of Congestive Heart Failure. J. I. Goodman and J. F. Corsaro—p. 338

Bicuspid Aortic Valves and Bacterial Endocarditis. S. Koletsky—p. 343

Tilting Ballistocardiograph. R. W. Wilkins—p. 351

Comparison of Value of Weltmann Reaction and Erythrocyte Sedimentation Rate in Patients with Rheumatic Heart Disease. S. Scherlis and D. S. Levy—p. 355

Roentgenologic and Electrocardiographic Changes in Normal Heart During Pregnancy. A. G. Hollander and J. H. Crawford—p. 364

Effect of Trichlorethylene on Human Canine and Rabbit Electrocardiogram. J. F. Mallach, G. H. Marquardt and S. C. Werch—p. 377

Tumors of Heart with Report of Primary Fibrosarcoma of Left Auricle and Pulmonary Vein Associated with Multiple Tumors of Mesentery and Alimentary Tract. J. M. Ravid and J. Sachs—p. 385

\*Significance of Vascular Hyperreaction as Measured by Cold Pressor Test. Observations on 200 Normal Subjects over Age of 40. H. I. Russek—p. 398

**Tetralogy of Fallot**—Feigin and Rosenthal present histories of 2 patients in whom at necropsy there were changes in the heart which constitute the tetralogy of Fallot, namely right ventricular hypertrophy, pulmonic stenosis, interventricular septal defect and dextroposition of the aorta. The patients were 53 and 43 years of age, respectively. These cases are unusual particularly because of the long period of survival. In both there were factors which tended to alleviate the serious functional changes. These factors may explain in part, the unusual longevity of both patients. The first patient is believed to have had originally an Eisenmenger complex which differs from the tetralogy of Fallot only in the absence of pulmonic stenosis. Rheumatic pulmonic valvulitis acquired some time after the age of 37 years resulted in pulmonic stenosis completing the tetralogy and contributing greatly to his disability and death. The second patient had the true tetralogy from birth. The presence of patency of the ductus arteriosus and, later, of systemic hypertension may have helped alleviate the cardiodynamic derangement and contributed to her longevity.

**Vascular Hyperreaction and Cold Pressor Test**—Russek's observations on 200 normal male subjects over the age of 40 years fail to support the idea that "vascular hyperactivity" is a significant factor in the development of essential hypertension. The subject remained recumbent in a quiet room and blood pressure readings were taken until a basal level was reached. The rest period was twenty to thirty minutes and usually four to five readings were made. The sphygmomanometer cuff remained on the arm during the whole procedure, and when the lowest level of blood pressure was reached the free hand was placed in a basin of water at a temperature of 4°C. The hand was kept immersed to a level just above the wrist for sixty seconds. The blood pressure was measured at thirty and sixty seconds. The response was recorded as the difference between the basal level and the maximum reading. Subjects whose response exceeded 20 mm. systolic and 15 mm.

diastolic were called hyperreactors. Those whose response did not exceed these figures were designated as hyporeactors. Forty one per cent of the entire group were hyperreactors. The incidence of hyperresponse increased with advancing age. The average response of both hyporeactors and hyperreactors increased with age, consequently a hyporeactor at 40 years might become a hyperreactor at 60 years. The increased response was attributed to changes in the threshold for pain and increasing vasomotor lability with succeeding decades.

There is no support for the view that the cold pressor response is characteristic for the individual throughout life. The combined incidence of hyperresponse and hypertension in the subjects 60 to 69 years of age was almost three times the incidence of hyperresponse in the school children observed by Hines. There was no relationship between hyperresponse and a positive family history of hypertensive cardiovascular disease. Hyperresponse among normal subjects in the later decades of life is unrelated to essential hypertension.

### American J. Obstetrics and Gynecology, St. Louis

46 333-478 (Sept.) 1943 Partial Index

Superficial Noninvasive Intraepithelial Tumors of Cervix. R. van Dyck Knight—p. 333

Fibroids in Pregnancy. J. H. Randall and L. D. Odell—p. 349

Effect of Pregnancy and Puerperium on Thiamine Status of Women. Helen S. Lockhart, S. Kirkwood and R. S. Harris—p. 358

Hemorrhage as Most Important Cause of Maternal Death. C. A. Gordon—p. 366

Influence of Pregnancy on Location of Center of Gravity, Postural Stability and Body Alignment. E. Corinne Fries and F. A. Hellerbrandt—p. 374

Significance of Erythrocyte Sedimentation Rate in Pelvic Pathology. Katherine Y. Y. Li—p. 381

Pregnancy and Double Uterus. H. C. Taylor—p. 388

Observations on Elderly Primigravida. H. W. Erving and H. A. Power—p. 395

Local Use of Acid Media and Sulfa Drugs in Management of Cervicitis and Vaginitis. M. A. Rohlee—p. 400

Uterine Contraction Pattern of False Labor and Its Relation to Premature Labor. Study of 16 Patients with Lóránd Tocograph. D. P. Murphy—p. 408

Parasitic Ovarian Cysts. H. I. Kantor—p. 412

Caudal Anesthesia in 160 Obstetric Cases. V. Parrett—p. 417

Use of Endocervical and Endometrial Smears in Diagnosis of Cancer and of Other Conditions of Uterus. G. N. Papanicolaou and A. A. Marchetti—p. 421

Method of Obtaining Endometrial Smears for Study of Their Cellular Content. W. H. Cary—p. 422

Use of Precoital Douche in Cases of Infertility of Long Duration. J. MacLeod and R. S. Hotchkiss—p. 424

Clinical Effects of Synthetic Estrogen Hexestrol. R. C. McElroy, E. G. Snyder and J. H. Clark—p. 446

Vulvovaginal Mycosis. F. S. Rogers—p. 450

### American Journal of Ophthalmology, Cincinnati

26 901-1010 (Sept.) 1943

Eye Manifestations of Xeroderma Pigmentosum. A. B. Reese and I. E. Wilber—p. 901

American Board of Ophthalmology Learns About Written Examinations. S. J. Beach—p. 911

Use of Vasodilators in Acute Fundus Disease. F. C. Cordes—p. 916

Roentgenography of Exophthalmos with Notes on Roentgen Ray in Ophthalmology. R. L. Pfeiffer—p. 928

Reply to Certain Criticisms of Aniseikonia. W. B. Lancaster—p. 943

\*Pigmentary Degeneration of Retina and Nerve Type of Deafness. W. A. Sirles and H. Slaughter—p. 961

Convergence Tests. J. I. Pascal—p. 967

Case of Congenital High Myopia with Fundus Changes. H. Elwyn and W. S. Knighton—p. 969

**Pigmentary Degeneration of Retina and Nerve Type of Deafness**—Sirles and Slaughter report 12 cases of retinitis pigmentosa. The patients were examined both subjectively and objectively and were considered to have typical cases of this disease. A careful otolaryngologic history was obtained and thorough examinations were made including audiograms of all patients. Of the 12 patients 6 were deaf as shown by audiograms and showed the typical nerve type of deafness. Only 4 of these gave a history of hearing impairment. Three of the 4 patients who gave a history of deafness had noticed this symptom from two to twenty eight years before they noticed any eye symptoms. It is suggested that a common germplasm defect is present in the anlage of the inner ear and the retina.

## Am J Syphilis, Gonorrhea and Ven Dis, St Louis

27 525-656 (Sept.) 1943

- \*Penicillin Sodium in Treatment of Sulfonamide Resistant Gonorrhea in Men Preliminary Report J F Mahoney, C Ferguson, M Buchholtz and C J Van Slyke—p 525
- Syphilis of Liver R D Hahn—p 529
- \*Chemotherapeutic Prophylaxis with Sulfonamide Drugs II The Effect of Small Doses of Sulfathiazole or Sulfadiazine on the Mental Efficiency and Hand Eye Coordination F W Reynolds and G W Shaffer—p 563
- Concurrent Use of Sulfathiazole and Hot Baths in Treatment of Sulfathiazole Resistant Case of Gonococcal Infection Suggestion for Armed Services N Jones and S L Warren—p 572
- Problems in Epidemiology of Venereal Disease in Wartime T Rosenthal—p 581
- Chemotherapy of Experimental Lymphogranuloma Venereum in Mice F T Callomon and H Brown—p 590
- \*Sulfadiazine and Sulfathiazole Therapy in Lymphogranuloma Venereum and Chancroid Report of 30 Cases R O Noojin, J L Callaway and W Schulze—p 601
- Gonorrhea from Standpoint of Army E B Howard—p 607
- Postural Hypotension in Tubes Dorsalis Case Report A C Woofler and A V Deibert—p 616
- Quantitative Complement Fixation Test for Syphilis in Malaria Treated Syphilis Effect of Diluent J R Dorgeloh—p 623
- Unusually High Titer Index in Patient with Fatal Hepatic Necrosis Following Malaria Case Report W I Geffer, D Turnoff and T G Schnabel—p 629

## Penicillin Sodium in Sulfonamide Resistant Gonorrhea

—Mahoney and his collaborators employed penicillin sodium therapy for 75 male patients hospitalized for sulfonamide resistant gonorrhea. All patients displayed evidence of purulent or mucopurulent urethritis, and *Neisseria gonorrhoeae* was demonstrated by both smear and culture methods. With one exception all patients had failed to respond to sulfonamide therapy. The routine therapy covered a period of forty-five hours and consisted of an intramuscular injection of 10,000 Florey units of penicillin sodium every three hours, night and day. The site of injection was the gluteal muscles. Distilled water 2 cc for each 10,000 units was used as the solvent. A 22 gage needle 1½ inches in length was employed. The diagnosis of gonorrhea was established by smear and culture and the identification of *Neisseria gonorrhoeae* confirmed by the characteristic sugar fermentation reactions. The term "cure" was used to mean freedom from all clinical evidence of infection and negative smear and culture findings in secretions collected on at least three different days following the completion of treatment. On this basis 74 of the 75 patients responded in a satisfactory manner and 1 was a therapeutic failure. This patient has been retreated without evidence of sensitization. Additional observations indicate that a treatment period of fifteen hours, with an appreciable reduction in the total amount of the drug, may be found effective.

## Effect of Sulfonamides on Mental Efficiency and Hand-Eye Coordination

—Reynolds and Shaffer point out that the widespread use of small doses of sulfonamide drugs as chemotherapeutic agents for the prevention of venereal infections (gonorrhea, chancroid and lymphogranuloma venereum), especially by the armed forces, makes desirable some information as to the effect of these drugs on the physiologic and psychologic processes on which fighting efficiency depends. A study was undertaken to determine what effects sulfathiazole and sulfadiazine have on mental efficiency and on hand to eye coordination. There were two groups of subjects for this study. (A) a group of 24 army medical officers and (B) a group of 49 university senior students. In each group, preliminary examinations were made in order to establish a base line. Sulfathiazole or sulfadiazine was administered in divided doses over a twenty-four hour period and the same tests repeated six hours and (in group B only) thirty hours after the last dose of the drug had been given. Half of the subjects in group A received a total of 6 Gm of sulfathiazole each, the other half receiving inert placebos similar in appearance to sulfathiazole tablets. In group B each of 19 subjects received 4 Gm of sulfathiazole, 20 subjects received 4 Gm of sulfadiazine and 10 were given inert placebos. Comparison of the sulfonamide treated groups with the controls reveals no statistically valid change in mental efficiency or hand to eye

coordination following either drug. A few subjects receiving sulfathiazole appeared to have an idiosyncrasy to the drug, since their performance was notably below that of all others. None of the subjects who were given sulfadiazine showed such an idiosyncrasy.

**Sulfadiazine and Sulfathiazole in Lymphogranuloma Venereum and Chancroid**—The report by Noojin and his collaborators concerns treatment of 10 patients with lymphogranuloma venereum, 10 patients with chancroid and 10 patients with lymphogranuloma venereum and/or chancroid. Half of each group were treated with sulfadiazine and half were treated with sulfathiazole. Six Gm of the respective drugs were given the first day and 3 Gm daily thereafter for twenty days, or a total of 66 Gm. The clinical results with both drugs were good. They seemed to be equally efficacious. In all patients the Frei and Ducrey tests were unaltered at the end of the treatment period and were unchanged in 11 patients seen six months later. Sulfadiazine or sulfathiazole therapy prevented lymph node suppuration and drainage where this had not already occurred. Only 1 patient out of 30 had to stop work because of a toxic drug reaction. Nevertheless leukocyte count and hemoglobin determinations on peripheral blood and urinalysis should be done every three or four days regardless of the sulfonamide used. Since drug reactions, particularly nausea, are more common with sulfathiazole than with sulfadiazine, the latter is the drug of choice.

## American Review of Tuberculosis, New York

48 131-204 (Sept.) 1943

- Tuberculous Infection in People Dying of Causes Other Than Tuberculosis H C Swcany, S A Levinson and A M S Stadnicko.—p 131
- Action of Artificial Gastric Juice and Duodenal Secretions on Tubercle Bacilli C Floyd and C G Page—p 174
- Experimental Tuberculous Pleural Effusion Causal Relationship of Tubercle Bacilli and of Specific and Nonspecific Protein to Its Production W S Lemon and W H Feldman—p 177
- Nocardia Asteroides* Its Pathogenicity and Allergic Properties C H Drake and A T Henrici—p 184

## Annals of Internal Medicine, Lancaster, Pa

19 405-566 (Sept.) 1943

- Physiologic Reactions of Thyroid Stimulating Hormone of Pituitary II Effect of Normal and Pathologic Human Thyroid Tissues on Activity of Thyroid Stimulating Hormone. R W Rawson, Ruth M Graham and Charlotte B Riddell—p 405
- Personnel Selection Short Method for Selection of Combat Officers C W Heath, W L Woods, L Brouha, C C Seltzer and A V Bock—p 415
- Postconcussion Syndrome—A Critique D Denny Brown—p 427
- \*Disabling Changes in Hands Resembling Sclerodactylia Following Myocardial Infarction A C Johnson—p 433
- Adjustment in Wartime E L Bortz—p 457
- Neurogenic Polycythemia G Carpenter, H Schwartz and A E Walker—p 470
- Role of Central Factors in Pathogenesis of Rheumatic Disorders R Pemberton and C W Seull—p 482

**Sclerodactylia-like Changes Following Myocardial Infarction**—Johnson observed trophic changes of the hands in 39 (21 per cent) of 178 consecutive cases of myocardial infarction. The appearance and course of these alterations were not similar to those seen in arthritis, but they resembled closely those in the hands of patients suffering with scleroderma and of patients having an abortive form of Raynaud's disease. The author presents the clinical observations on the 39 cases in a table. The term "postinfarction sclerodactylia" is offered as a name for this syndrome. The author thinks that many cases showing this syndrome are at the present time classified as rheumatoid arthritis, atrophic arthritis, atypical arthritis, causalgia, and so on. He suggests that the cause of "postinfarction sclerodactylia" is anoxia of the tissues of the fingers, produced chiefly by ischemia resulting from reflex vasoconstriction of the arteries of the hand, and that the lesser ischemic effects of the arteriosclerosis of these arteries and the local anoxemia of the fingers which is part of the general anoxemia resulting from myocardial injury may increase the degree of the damaging tissue anoxia.

# Archives of Otolaryngology, Chicago

38 205 308 (Sept) 1943

- End Results of Treatment of Malignant Lesions of Nasopharynx G B New and W Stevenson—p 205  
 \*Peritonsillitis and Peritonsillar Abscess with Special Reference to Treatment with Sulfonamide Compounds H Capus p 210  
 New Approach to Treatment of Snoring Preliminary Report J F Strauss—p 225  
 Abscess of Pterygomaxillary Space with Involvement of Mandibular Foramen Review of Literature and Report of Case I I Shure—p 230  
 Cholesteatoma of External Auditory Meatus F Altmann and J G Waltner—p 236  
 Fate of Liquid Petrolatum Instilled into Nose F J Novak Jr—p 241  
 Influence of Vestibular Stimulation on Lusion Frequency of Flicker in Normal Subjects and in Patients with Postconcussion Syndrome E Simonson M S Fox and N Enner—p 245  
 Hearing Aid from Patient's Point of View W Hugheson and Eva Thompson—p 252  
 Post Therapy Observations on over 2 000 Subjects with Speech Defects C H Voelker—p 261  
 Sarcoma of Larynx C B Ferguson—p 265  
 Paranasal Sinuses Review of Literature for 1942 S Salinger—p 270

**Sulfonamides in Peritonsillitis and Peritonsillar Abscess**—Capus used sulfonamide compounds in 33 unselected cases of peritonsillitis and peritonsillar abscess. In the first 10 cases sulfanilamide was employed in the following 19 cases sulfathiazole, and in the last 4 cases sulfadiazine. Analysis of the results of this study lead the author to believe that peritonsillitis and peritonsillar abscess are due principally to a mixed infection rather than to the beta hemolytic streptococcus. The commonest type of mixed infection was that due to combination of the beta hemolytic streptococcus and Staphylococcus aureus alone or with other organisms. Sulfanilamide has a beneficial action, since it causes spontaneous regression in some cases and tends to prevent complications. However, recurrences are common with its use. Sulfathiazole is far superior to sulfanilamide, causing resorption in a greater number of cases, and recurrences are not common with its use. Sulfathiazole has a decided masking action on the symptoms without necessarily preventing progression to abscess formation and so enables one to avoid incision and drainage in most cases of abscess formation, or at least to wait for clearcut evidence of fluctuation before carrying out this procedure. Sulfadiazine is probably the drug of choice, but further study is needed to confirm this conclusion. The dreaded complications of peritonsillar abscess are uncommon when therapy with one of the sulfonamide compounds is employed. Conservative treatment supplemented by use of a sulfonamide compound is far safer and more satisfactory than tonsillectomy.

# Archives of Pathology, Chicago

36 237-334 (Sept) 1943

- Utilization of Calcium by Rats on High Protein Low Calcium and High Carbohydrate-Low Calcium Diets Effect of Supplementary Vitamin D L G Wesson and P E Boyle—p 237  
 Influence of Vitamin D on Structure of Teeth and of Bones of Rats on Low Calcium Diets P E Boyle and L G Wesson—p 243  
 Incomplete Rupture of Aorta Not Followed by Dissecting Aneurysm Report of 2 Cases F Wenger—p 253  
 Advantages of Egg Culture Technique in Infectious Diseases I Menzies (a) Primary Isolation of Organisms from Spinal Fluid (b) Culture of Spinal Fluid During Treatment with Sulfonamide Compounds R J Blattner Florence M Heys and A F Hartmann—p 262  
 Chemical Basis of Injury in Inflammation V Menkin—p 269  
 Hypertensive Disease of Brain I M Scheinker—p 289  
 Experimental Appendical Abscesses Myxoglobulosis and Peritoneal Pseudomyxoma A S Rubnitz and H T Hermann—p 297  
 Disseminated Lupus Erythematosus—An Allergic Disease? R A Fox—p 311

# Bulletin of Johns Hopkins Hospital, Baltimore

73 143-238 (Sept.) 1943

- Studies on Mitotic Activity of Corneal Epithelium Methods Effects of Colchicine Ether Cocaine and Ephedrine W Buschke J S Friedenwald and W Fleischmann—p 143  
 Electrocardiographic Changes Associated with Thiamine Deficiency in Pigs M M Wintrobe R Alcayaga S Humphreys and R H Folli Jr—p 169  
 Plasma Proteins in Disseminated Lupus Erythematosus A F Coburn and D H Moore—p 196  
 Scapulectomy and Cleidectomy in Rat L W Pratt—p 223

# Canadian Journal of Public Health, Toronto

34 393 432 (Sept) 1943

- Facilitation Process and Venereal Disease Control Study of Source Finding and Suppression of Facilitation in Greater Vancouver Area D H Williams—p 393  
 \*Tetanus Toxoid and Its Use for Active Immunization D T Fraser D I MacLean M D Orr H C Plummer and F O Wishart—p 406  
 Tularemia in Seven Persons Coulee Alberta M R Bow and J H Brown—p 415  
 Examination of Sera from Persons in Manitoba Ontario and Quebec for Neutralizing Antibodies (Western Type) of Encephalomyelitis C A Mitchell and J W Pullin—p 419

**Tetanus Toxoid for Active Immunization**—Fraser and his associates state that by the use of a medium of veal infusion and hog stomach autolysate tetanus toxin of high titer has been obtained. The use of this toxoid did not cause anaphylactic reactions. The response in antitoxin in persons given three doses of tetanus toxoid is better than in persons given two doses. A small (0.1 cc) secondary stimulus given ten weeks after the primary inoculation caused 85 per cent of 20 persons to show an increase in antitoxin titer within nine days. A combined antigen of tetanus toxoid with typhoid vaccine (T A B T) given in three 1 cc doses three weeks apart stimulated the production of at least 0.02 unit of antitoxin in 99 per cent of 79 persons and at least 0.1 unit in 87 per cent. Although the conditions for a critical comparison are lacking, since the identical antigen was not used in the two groups compared, the results suggest that tetanus toxoid with the typhoid element added (T A B T) is more effective than without. Under field conditions the effectiveness of a recall dose of 0.5 cc of T A B T was explored. Of 168 persons, 92 per cent had at least 0.1 unit of antitoxin per cubic centimeter of serum following the first recall dose. In general the antitoxin response to a recall dose is less in persons with low levels of antitoxin than in persons with relatively higher levels. The levels of antitoxin are distinctly higher in persons one year after a recall dose than one year after the primary inoculations. From ten days to seventeen months after a second recall dose, given one year after the first recall dose, all of 67 persons had at least 0.1 unit per cubic centimeter of serum. The recommendation is put forward that the first recall dose of T A B T (fourth dose) be given not less than three and not more than six months after the primary series of injections. Modification of this schedule may be advisable in order that a recall dose may coincide with the entry of troops into the combat zone.

# Endocrinology, Springfield, Ill

33 121-188 (Sept.) 1943

- Factors Influencing Reproductive Cycle in Chimpanzee Period of Adolescent Sterility and Related Problems W C Young and R M Yerkes—p 121  
 Effect of Thyroidectomy on Resistance to Low Environmental Temperature C P Leblond and J Gross—p 150  
 Studies on Response of Hypophysectomized Rats to Intraperitoneal Glucose Injections S Joseph, Malvina Schweizer and R Gannt—p 161  
 Effects of Pituitary Gonadotropins on Estrual Phenomena in Ewes E J Warwick and L E Casida—p 169  
 Relation of Body Weight to Liver Glycogen Storage Potency of Adrenal Cortical Extracts H C Bergman and D Klein—p 174  
 Effect of Continued Oral Administration of Diethylstilbestrol on Blood Pressure Heart Rate and Respiration of Albino Rats C S Matthews F E Emery and P L Weygandt—p 177  
 Further Study of Specificity of Diabetogenic Effect of Diethylstilbestrol in Partially Pancreatectomized Rat D J Ingle and J Nezamis—p 181

# Journal of Infectious Diseases, Chicago

73 1-92 (July-Aug) 1943

- Direct Plasmodicidal Effect of Quinine Atabrine and Plasmochin on Plasmodium Lophurae R I Hewitt and A P Richardson—p 1  
 Occurrence of Sulfonamide Resistant Pneumococci in Clinical Practice M Hamburger Jr L H Schmidt Clara L Sesler J M Rueggsegger and Eda S Gruen—p 12  
 Antigenic Analysis of Trichinella Spiralis L R Melcher—p 31  
 Factors Affecting Genetic Resistance of Mice to Mouse Typhoid J W Gowen and M Lois Calhoun—p 40  
 Comparative Effect of Certain Sulfonamide Compounds on Nicotinamide Stimulated Metabolism S Berkman and S A Koser—p 57  
 Studies on Experimental Bartonella Muris Anemia in Albino Rat W R Kessler—p 65  
 Chronic Toxoplasmosis D Weinman—p 85

## Journal National Malaria Society, Tallahassee, Fla 2 5-78 (No 1) 1943

- War and Our Opportunity for Service J H O'Neill—p 5  
 National Malaria Society A Sketch M F Boyd—p 15  
 Variations in Asexual Cycle of *Plasmodium* When Transferred to Abnormal Host W B Redmond and R M Prather Jr—p 25  
 Review of Recent Research on Drug Prophylaxis and Treatment of Malaria (Report of National Malaria Society) H C Clark—p 31  
 \*Malaria Mortality and Morbidity in United States for Year 1941 E C Faust—p 39  
 Emergent Vegetation, Mechanical Properties of Water Surface and Distribution of Anopheles Larvae C E Renn—p 47  
 Studies on Mode of Action of Quinine in Avian Malaria E Walatzky and H W Brown—p 53  
 Methods Used for Investigating Certain Hydrologic Problems Related to Malaria M H Goodwin Jr and Louva G Lenert—p 63  
 Totinque and Conservation of Quinine H E Melaney—p 77

**Malaria in the United States in 1941**—Faust stresses that the 1941 reports reveal a continued decline in malaria deaths, which began in 1936 and have with few exceptions decreased year by year. Malaria in the U S Army in the continental United States has consistently paralleled that of the civilian population but since 1918 has been considerably lower in cases and much lower in deaths. The former has been brought about by increasing prophylactic measures within the posts and in the immediate vicinity of army camps, the latter by early and accurate diagnosis and treatment of cases. The participation of military personnel from Northern states in the Louisiana-Texas area maneuvers in the early fall of 1941 was reflected in increased malaria cases in these troops on their return to quarters in the Fifth and Sixth Corps areas. This suggests that malaria is not necessarily declining but is only temporarily suppressed in endemic foci and awaits completely nonimmune subjects for reactivation. Soldiers and civilian employees in tropical defense bases will be contracting malaria in tropical defense and combat areas and will sooner or later be returned to the continental United States as convalescent carriers. This will offer a potential opportunity for heterologous tropical strains of malaria plasmodia to become established in our midst. Thus in the near future a new malaria problem may significantly alter the present trend in reduced malaria morbidity and mortality in the United States.

## Journal of Pediatrics, St Louis 23 251-370 (Sept) 1943

- Macrosomia, Cardiac Hypertrophy, Erythroblastosis and Hyperplasia of Islands of Langerhans in Infants Born to Diabetic Mothers H C Miller and H M Wilson—p 251  
 Studies of Nitrogen and Fat Metabolism on Infants and Children with Pancreatic Fibrosis A T Shohl, C D May and H Schwachman—p 267  
 Skin Disease of Newborn Infant Consideration of Relationships Between Leiner's and Ritter's Disease with Case Report. M E Sano—p 280  
 \*Rh Factor and Its Importance in Transfusion for Anemias of Erythroblastosis and Other Causes Case Reports H R Brown Jr and P Levine—p 290  
 \*Mortality in Acute Staphylococcal Empyema in Infants and Children Study of 33 Surgically Treated Patients W E Ladd and H Swan—p 297  
 Use of Acetylsalicylic Acid in Treatment of Congenital Syphilis in Children J Yampolsky and C C Powell—p 303  
 Whole Lactic Acid Evaporated Milk Does Not Require Refrigerator H G Taylor and R W Roberts Jr—p 307  
 Use of Cereal Thickened Formulas to Promote Maternal Nursing C A Stewart—p 310  
 Emotional Disturbances of Constant Pattern Following Nonspecific Respiratory Infections Helen G Richter—p 315  
 Use of Suppository as Vehicle in Sulfonamide Therapy J H Park Jr—p 326  
 Trichinosis During Childhood H A Slesinger—p 327  
 Treatment of Kaposi's Varicelliform Eruption with Sulfonamide Drugs Angie Connor and J E Gonce Jr—p 335  
 Obstruction of Large Bowel in Newborn Infants Due to Congenital Bands J Zaslow—p 337  
 Typhoid Fever in Seven Month Old Infant W Sako and J Fleet—p 340  
 Problems in Safeguarding Adoptions H K Berkley and Mary Ruth Colby—p 344  
 Pulmonary Manifestations Following Ingestion of Kerosene L I Lesser, H S Weens and J D McKee—p 352  
 Acute Infectious Myelitis Following Rubella M H Morris and A Robbins—p 365

**Rh Factor in Transfusion for Anemias of Erythroblastosis**—Isoimmunization with Rh factor can be caused either by repeated transfusions of Rh— patients with Rh+ blood or by pregnancy in Rh— mothers with Rh+ fetuses.

Brown and Levine report 2 cases in which important therapeutic applications of the knowledge of Rh immunization are illustrated. The first patient, an infant 9 days old with diagnosis of erythroblastosis fetalis, was treated with blood transfusions. Prior to the demonstration of anti Rh agglutinins in the mother's serum, three transfusions of the mother's blood were given to the infant with consequent aggravation of the condition. On the use of Rh— blood in the transfusion, an immediate increase in red cell count and hemoglobin was observed. Owing to the susceptibility of the Rh+ fetal blood to the action of maternal agglutinins, Rh+ blood should be avoided in the treatment of erythroblastosis fetalis. The use of Rh— donors is necessary for the treatment of this condition. The second patient, a woman aged 42, was being treated with repeated blood transfusions for liver cirrhosis accompanied by severe anemia. Even though the same donors were used, after a number of transfusions the patient suddenly developed a severe and almost fatal reaction. Each of six donors previously compatible was now incompatible with the patient's serum and all were Rh+. When Rh— donors were used, no reaction occurred. The authors point out that 90 per cent of all intra-group transfusion accidents following repeated transfusions occur in Rh— individuals.

**Mortality in Acute Staphylococcal Empyema in Infants and Children**—Ladd and Swan analyzed the mortality rate in 33 cases of acute staphylococcal empyema in children under 13 years of age. The incidence of staphylococcal empyema was preponderantly highest in the first year of life. Of 33 patients, 22 were less than 1 year old. The mortality rate appeared also to be essentially dependent on the age of the patient. Thus, in 12 patients less than 4 months old the mortality was 66.7 per cent, whereas in 21 patients over 4 months of age the mortality was 4.8 per cent. The presence or absence of complications had no relation to the ultimate outcome. The higher mortality in early infancy suggests an abnormal pathologic and immunologic response to staphylococcal infection in this age group. Postmortem examination revealed in the younger infants the presence of widespread hemorrhagic exudative pneumonia. The progression of the underlying staphylococcal pneumonic process, and not empyema, appeared to be the cause of death.

## Missouri State Medical Assn Journal, St. Louis 40 269-304 (Sept) 1943

- Adiposogenital Dystrophy (So Called Froehlich's Syndrome) A A Werner—p 269  
 Contact Dermatitis Its Diagnosis and Treatment. N Tobin—p 272  
 Ellis Fischel State Cancer Hospital Report to Physicians of Missouri. L V Ackerman—p 276  
 Sodium Sulfoeyanate (Thiocyanate) in Treatment of Hypertension. D M Petersen—p 279

## 40 305-338 (Oct) 1943

- Two Hundred Deliveries Under Low Spinal Anesthesia B H Klein—p 305  
 Nonparasitic Cysts of Liver Report of 2 Cases and an Analysis of Literature J M McCaughan and L Rassieur—p 306  
 Pruritus Associated with Menstruation C C Wilson—p 312  
 Problems in Diagnosis of Heart Disease J C Edwards—p 314

## New England Journal of Medicine, Boston 229 423-454 (Sept 9) 1943

- Acute Pericarditis with Special Reference to Changes in Heart Size L Wolff—p 423  
 \*Intraperitoneal Use of Sulfanilamide in Gastrointestinal Resections T J Anglem and H M Clute—p 432  
 \*Antithyroid Factor in Fish P S Owen and J W Ferrebee—p 435  
 General Anesthesia L P Zentgraf and U H Eversole—p 437

**Intraperitoneal Use of Sulfanilamide in Gastrointestinal Resections**—Anglem and Clute used sulfanilamide as a prophylactic agent by local implantation within the peritoneal cavity in 75 cases of gastrointestinal anastomosis or other operative procedures requiring the opening and closure of hollow viscera within the peritoneal cavity. Sulfanilamide was applied intraperitoneally along the suture lines in the viscera. There were no deaths from peritonitis. Clear evidence of intraperitoneal infection was observed post mortem in only 1 fatal case and in this case was not the cause of death. Only 1 patient had a toxic reaction to the drug, a toxic hepatitis with recovery. The experience with this series has convinced the authors of



the value of the local intraperitoneal use of sulfanilamide along the suture lines after gastrointestinal anastomosis and in all cases with peritoneal soiling. The danger of serious toxic reaction to the drug is slight if the intraperitoneal dosage does not exceed an average dose of 8 Gm in adults and if this dose is not immediately preceded or followed by the additional oral administration of a sulfonamide.

**Antithiamine Factor in Fish**—Owen and Terrebee point out that epidemics of a severe and usually fatal paralytic disturbance have been observed in animals when fish has been added to their diet. The first symptom is anorexia, which is usually followed in a few days by weakness, hyperesthesia, ataxia and death. The disease is evidently one of thiamine deficiency, since it may be produced by thiamine deficiency under experimental conditions and may be cured by thiamine injections. The disease has been observed following the consumption of carp, Atlantic Coast whiting, Pacific Coast mackerel, Lake Superior and Lake Michigan herring suckers, smelts, mullets and great northern pike. Diets containing 20 per cent of fish muscle were found to be innocuous whereas diets containing 10 per cent of whole raw fish promptly produced symptoms. There are a number of reasons why thiamine deficiency of this particular mechanism of origin may not be frequent in man. The portions of fish that are rich in antithiamine factor are for the most part those usually discarded in the preparation of fish for human consumption, that is viscera, heads, skins and scales. Furthermore, the antithiamine factor is destroyed by cooking or drying.

#### 229 455-494 (Sept 16) 1943

- E endemic Rocky Mountain Spotted Fever in Massachusetts A D Rubenstein and H T Rowley—p 455  
\*Ascorbic Acid Content of Late Winter Tomatoes A D Holmes C P Jones and W S Ritchie—p 461  
Incidence of Gallstones in Higher Age Groups F I Dessau—p 464  
Kneplastic Amputation of Forearm J D Adams—p 466  
Cancer Results of Treatment I T Nathanson—p 468

#### 229 495-532 (Sept 23) 1943

- Nutritional Requirements in Time of War R M Wilder—p 495  
Sarcoidosis S Katz C P Cake and H R Reed—p 498  
Use of Dalbous's Water in Treatment of Skin Diseases G E Morris—p 509  
Dry Ice Burn of Hypopharynx Report of Case J E Quincy—p 510  
Chemical Factors in Inflammation and Cellular Injury V Menkin—p 511

**Ascorbic Acid Content of Late Winter Tomatoes**—Holmes and his associates point out that a number of factors affect the amount of ascorbic acid developed in tomatoes. During the late winter and early spring months tomatoes are commonly found in the stores which in neither color, taste nor physical appearance compare with the high quality of the field grown, vine matured summer tomatoes. As these tomatoes are grown, shipped and sold under conditions quite different from those of the normal, local growing season, it appeared desirable to determine the ascorbic acid content of typical late winter tomatoes. The tomatoes analyzed were obtained from six local stores. It was found that the ascorbic acid content of the late winter tomatoes is only about one third that of summer tomatoes. Hence it is obvious that whereas the late winter tomato possesses attractive decorative features for the table, particularly in salad combinations, it does not have the ascorbic acid value of fresh summer tomatoes or of tomatoes canned six months previously. The homemaker, nutritionist and physician must not consider late winter tomatoes as equivalent to vine matured, sun ripened summer tomatoes as a source of ascorbic acid for the human dietary. In computing the vitamin C value of a diet containing late winter tomatoes, one should not assign to them more than one third the ascorbic acid value ordinarily used for fully ripe summer tomatoes.

#### New Jersey Medical Society Journal, Trenton

##### 40 349-378 (Sept) 1943

- Cryotherapy for Common Skin Diseases C C Carpenter—p 354  
Primary Atypical Pneumonia Clinical Description of Disease Based on 250 Cases, M Kasich and I S Cohen—p 358  
Anemia of Pregnancy T K. Graham—p 365

#### Northwest Medicine, Seattle

##### 42 241-274 (Sept) 1943

- Child as Wartime Problem R H Parry—p 244  
Insects and Their Allies as Causative Agents and Transmitters of Disease E C Frost—p 250  
Causes of Postoperative Deaths D Metheny, K K Sherwood and B Zimmerman—p 258  
Medical Department of Navy H H Kretzler—p 260  
Relation of Structure of Adrenal Cortex to Function in Hypertension W B Dublin—p 263

#### South Carolina Medical Assn Journal, Florence

##### 39 225-248 (Sept) 1943

- Coronary Embolism Report of Case Complicating Syphilitic Aortitis H R Pratt Thomas—p 225  
Medical Statistics of South Carolina II Factors of Urbanization and County Wealth in State Distribution of Physicians A M Lassek—p 228  
Technic of Management of Hernia Sac. K M Lippert—p 233

##### 39 249-262 (Oct) 1943

- Meningitis in Newborn Infant Due to Colon Bacillus J I Waring—p 249  
Tale of Two Sisters (Pseudohermaphroditism) A E Baker—p 251  
Galvanize Poisoning in Industry R W Lominaek—p 252

#### Surgery, Gynecology and Obstetrics, Chicago -

##### 77 225-336 (Sept.) 1943

- Oblique, Aseptic, End to End Ileac Anastomosis, Procedure of Choice in Strangulating Small Bowel Obstruction C Dennis—p 225  
Wound Healing—Experimental and Statistical Study III Experimental Observations S A Localio, W Casale and J W Hinton—p 243  
Acute Obstructive Cholecystitis and Application of Principles of Its Rational Treatment J H Saint—p 250  
Changes in Extracellular Water at Delivery and in Puerperium. L C Chesley and Janet M Boog—p 261  
Thoracic Injuries Review of Cases D C Elkin and F W Cooper Jr—p 271  
Cystosarcoma Phylloides with Consideration of Its More Malignant Variant W G Cooper Jr and L V Ackerman—p 279  
\*Radiodermatitis of Head and Neck with Discussion of Its Surgical Treatment F A Figg, G B New and C R Dix—p 284  
Malignant Tumors of Kidney Surgical and Prognostic Significance of Tumor Thrombosis of Renal Vein J R McDonald and J T Priestley—p 295  
Congenital Dislocation of Hip with Special Attention to After Care Period and Late Postreductive Results G Whiston—p 307  
Surgical Treatment of Bronchiectasis Report on 76 Patients. H H Bradshaw and J F O'Neill—p 315  
Omphalocele Anatomical and Clinical Considerations. N W Specht and E H Sbrayok—p 319  
Avulsion of Scrotum and Skin of Penis Technic of Delayed and Immediate Repair L T Bjars—p 326

**Surgical Treatment of Radiodermatitis**—According to Figg and his collaborators, radiodermatitis often is more serious than the condition for which treatment was given primarily. Overexposure during diagnostic or therapeutic procedures usually is responsible for such lesions, but individual susceptibility is an important etiologic factor. The acute stage of the disease is self limiting unless excessive reaction is present, and surgical treatment is contraindicated during this period. The chronic stage of the process is progressive and there is a decided tendency for epithelioma to develop. Surgical removal is the only means of controlling the condition when secondary irradiation changes are pronounced. Primary closure of the wound is at times possible following excision of the region of radiodermatitis. When this is not feasible, application of a free skin graft or use of a sliding flap or a pedicle flap is required. The ultimate result in these cases as a rule is satisfactory.

#### West Virginia Medical Journal, Charleston

##### 39 297-332 (Sept.) 1943

- Medical Aspects of Hypertension I H Page—p 297  
Social Problems of Gynecology and Obstetrics. A F Guttmacher—p 300  
Citizenship as Related to Licensure W E Vest—p 307  
Symptoms of Disease of Infantile Paralysis Elizabeth Kenny—p 312

##### 39 333-364 (Oct.) 1943

- Chemotherapy of Tropical Diseases Some Aspects of Progress Through Research. G A Emerson—p 333  
Tropical Dysenteries J S Maxwell—p 338  
Hookworm C C Fenton—p 341  
Parasites of Livestock in Tropics J H Rietz—p 345  
War Malaria Its Significance in Civilian Practice R H Konstadter—p 346

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Anesthesia, Manchester

18 141-192 (July) 1943

- Ether versus Cyclopropane (Statistical Comparison of Circulatory Complications After Abdominal Operations) C. Eisenhart, R. A. Simpson and N. A. Gillespie—p. 141  
Method of Keeping Anesthetic Records and Assessing Results M. Nosworthy—p. 160  
Anesthetic Record P. Ayre—p. 180

## British Medical Journal, London

2 289-318 (Sept. 4) 1943

- \*Rh Factor and Erythroblastosis Fetalis Investigation of 50 Families R. R. Race, G. L. Taylor, D. F. Cappell and Marjory N. McFarlane.—p. 289  
\*Hemolytic Disease of Newborn (Erythroblastosis Fetalis) Its Treatment with Rhesus Negative Blood Janet D. Gimson—p. 293  
\*Occurrence of Rh Antigen in Population Notes on 5 Cases of Erythroblastosis Fetalis E. D. Hoare—p. 297  
Note on Rehabilitation of Heart Patients B. Parsons Smith—p. 298

2 319-350 (Sept. 11) 1943

- Transfusion Reactions and Fatalities Consequent on Circulatory Overloading R. Drummond—p. 319  
Effect on Uterus of Extracts of Gorse (*Ulex Gallii*) W. Smith and A. Wilson—p. 322  
Analysis of Acute Respiratory Conditions in African Soldiers W. W. MacNaught and R. M. Murray Lyon—p. 324  
Night Vision in Army Report of 10,333 Tests by A. Lister and J. W. Bishop—p. 325  
Filariasis in Middle East J. Fine and L. L. L. —p. 327  
Determination of Hematocrit Values in Wound Shock Routine Procedure M. Reiss—p. 328

**Fetal Erythroblastosis**—Race and his co-workers report observations on fifty families in which fetal erythroblastosis was diagnosed. The cases were referred to them by practitioners and pathologists from many parts of Britain. It seems reasonably certain that the diagnosis of erythroblastosis was correct. Of the 50 mothers, 6 were Rh positive and 44 were Rh negative. In the serums of 38 of these Rh negative women were found anti-Rh agglutinins. In spite of the absence of demonstrable anti-Rh agglutinins in 6 Rh negative cases it is highly probable that isommunization of the mother to the Rh factor played a part, the absence of anti-Rh may in some of them have been due to the length of time since delivery, which on the average was four years as against less than a year for the 38 cases in which antibody was found. While Rh is the blood group factor most commonly involved in the causation of fetal erythroblastosis, it appears certain that other red cell antigens may behave in a similar way. In one pregnancy in five the mother's serum contains an isoagglutinin for an antigen of the A-B-O system of groups present in her fetus. This will always be so when the fetus is of group AB save in about 1 case in 6, in which the mother will also be of group AB. In such a heterospecific pregnancy the mother's natural isoagglutinins might perhaps cause the destruction of her child's red cells. There is reason to believe that all Rh positive children of Rh negative mothers are not equally liable to the disease. In most families two or three positive children seem to be necessary before an affected child is produced. Of the first children borne by the 44 Rh negative mothers 38 were unaffected, 5 were stillbirths or miscarriages and 1 is known to have suffered from the disease. About a quarter of the children diagnosed as having erythroblastosis survived, three fourths were born dead or died mostly within a week of birth.

**Hemolytic Disease of the Newborn**—Gimson reports 19 consecutive cases of hemolytic disease of the newborn. All the mothers were Rh negative and all the infants were Rh positive. Anti-Rh agglutinins were found in the mother's serum in all but 1 case. At the beginning of the series a transfusion of Rh positive blood was given when the condition was such that it was unjustifiable to withhold treatment until the Rh picture had been determined and a supply of Rh negative blood had been obtained. In the first three cases in which Rh positive blood was used there was evidence of continued and even increased hemolysis. Within a few hours or days the hemoglobin and erythrocyte levels had fallen considerably and the

infants were in need of further transfusion. The next transfusion was of Rh negative blood. The rationale of giving Rh negative blood free of agglutinins is that the fetal blood is Rh positive and is undergoing destruction. It is desirable to give blood which is not so destroyed. Further hemolysis of the patient's red cells is not prevented by giving Rh negative blood. Blood is being provided, however, which will not be destroyed more rapidly than normal and on which the infant can live until the hemolytic process of the disease has come to an end. In a few cases mixed transfusions of Rh positive and Rh negative blood were given so that the survival rate of the two types of erythrocyte could be studied. Rh negative erythrocytes were usually found to survive for at least ninety days, whereas Rh positive erythrocytes were often destroyed within a few days of transfusion. All 18 of the infants who were given blood transfusions regained and maintained a normal blood picture, whereas only 7 of a group of 17 treated between 1935 and 1941 progressed satisfactorily. Transfusion with rhesus negative blood free of agglutinins should be employed for the treatment of hemolytic disease of the newborn. A relatively large transfusion is advocated, as no hemolytic reaction need be anticipated. A minimum number of transfusions will be necessary. A store of rhesus negative blood free of agglutinins should be available to all pediatric units and maternity hospitals. Pregnant women who have previously borne an infant with hemolytic disease should be tested for the rhesus factor. If Rh negative, she should be delivered in a maternity institution where Rh negative blood is available. For an infant born jaundiced, with a family history of hemolytic disease, immediate transfusion with Rh negative blood free of agglutinins should be given, no matter what the erythrocyte and hemoglobin levels.

**Occurrence of Rh Antigen in Population**—Hoare determined the incidence of the Rh factor in 1,122 unselected blood donors. There were 949 (84.6 per cent) with Rh positive blood and 173 (15.4 per cent) with Rh negative blood. The author also describes 5 cases of fetal erythroblastosis. In all of them the father and child were Rh positive while the mother was Rh negative. In all cases the mother's serum contained Rh antibodies. At the time these cases occurred the reports that Rh negative blood often survived longer in the circulation of infants with fetal erythroblastosis than Rh positive blood had not appeared, and as there was no theoretical reason against the use of Rh positive blood the Rh grouping of the transfused blood was not determined.

2 351-380 (Sept. 18) 1943

- Medical Research in Wartime E. Mellanby—p. 351  
Pituitary Hypothyroidism with Impaired Renal Function G. E. Beaumont and J. D. Robertson—p. 356  
Human Infection with Bact. Cholerae-Suis Report of 2 Cases Herta Schnabacher, Joan Taylor and M. H. G. White—p. 358  
\*Sympathectomy in Treatment of Cryopathies E. D. Telford—p. 360  
\*Misuse of Intravenous Neosphenamine for Vincent's Infection E. C. O. Jewesbury—p. 360  
Physiologic Factor in Hemoglobinometry E. F. McCarthy—p. 362

**Sympathectomy for Cryopathies**—The cryopathies include frostbite, immersion foot and hand, trench foot and shelter foot. Telford believes that the inclusion of these lesions in one group is justified by the fact that the pathologic changes are identical, they differ only in the degree of damage. In the treatment of these patients the temperature of the damaged parts must be raised with extreme slowness and caution. A too rapid return to normal will be disastrous. Sympathectomy was advocated in the immediate treatment, but against this suggestion is the fact that after rescue the chilled areas become notably hyperemic. Although the majority of patients appear to make a good recovery with no, or trivial, loss of tissue, others continue to suffer from symptoms which are due to a combination of sclerosis and deficient blood supply. The after troubles most often seen are pain of a burning or tingling type increased by warmth and exertion, persistent indurated swelling, chronic ulcers of pulps or extremities of digital stumps, loss of movement of fingers and toes, and occasionally a sensitization to cold which results in the Raynaud phenomenon. Hyperhidrosis may also be troublesome. These end results are those of vascular occlusion. For these later troubles a sympathectomy may offer some relief. The author treated the later sequences of trauma from

cold by preganglionic sympathectomy in 5 cases. In each of these cases a gratifying relief of symptoms has been obtained. It appears that sympathectomy is worth while in the chronic and painful sequelae of the cryopathies.

**Misuse of Intravenous Neosarsphenamine for Vincent's Infection**—Jewsbury points out that there still seems to be a fairly widespread impression that intravenous neosarsphenamine is the most potent method of treatment in severe cases of trench mouth or Vincent's infection. Occasional reports of Vincent's infection occurring in patients undergoing antisyphilitic treatment have cast doubt on the efficacy of intramuscular or intravenous arsenic administration in dealing with lesions of the mouth. The author cites histories of 2 men who developed Vincent's infection while undergoing neosarsphenamine treatment for syphilis. He feels that if the drug is valueless prophylactically, skepticism as to its value as a single intravenous injection for Vincent's angina is even more justified. Treatment of Vincent's infection calls primarily for treatment of the underlying condition whether it is local or general. Nutritional deficiencies must be remedied. Healing of the lesions in the mouth is best accomplished by daily local applications of 10 per cent chromic acid followed immediately by hydrogen peroxide (10 vols) and subsequent two hourly mouth washes of peroxide. This local treatment is particularly valuable when combined with 150 mg of nicotinic acid daily by mouth. The author hopes that the employment of intravenous arsenical compounds for this condition will be recognized as useless and wasteful.

### Journal of Pathology and Bacteriology, Edinburgh

55 245-396 (July) 1943

- Necrosis of Islets of Langerhans Produced Experimentally J S Dunn J Kirkpatrick N G B McLetchie and S V Telfer—p 245  
Immediate Vascular Changes in True Prostate. R Greene—p 259  
Further Experiments on Effects Produced by Extracts of *H. Pertussis* on Blood Sugar of Rabbits D G Evans—p 269  
Toxin Production by Three Types of *C. Diphtheriae* K Zinnemann—p 275  
Rapid Identification of *Cl. Welchii* by Nagler Tests in Plate Cultures Nancy J Hayward—p 285  
Two Cases of Interstitial Cell Tumor of Human Testis Georgiana M Bomser and Leila M Hawksley—p 295  
Localization of Experimental Tumors in Sears and Healing Wounds B D Pullinger—p 301  
Preparation of Phenolphthalein Phosphate E J King—p 311  
Phosphatase Reaction as Aid to Identification of Micro-Organisms Using Phenolphthalein Phosphate as Substrate J Bray and E J King—p 315  
Metabolism of Coliform Bacilli in Distilled Water J W Bigger and J H Nelson—p 321  
Group Specific Substances A B M A and Rh Their Occurrence in Tissues and Body Fluids Kathleen E. Boorman and Barbara E Dodd—p 329  
\*Case of Adrenal Carcinoma and Its Hormone Diagnosis A F Anderson A M Hain and J Patterson—p 341  
Production of Fatty Degeneration of Heart Muscle by High Fat Diet. A D T Govan—p 351  
Seasonal Variation in Incidence of *Brucella Abortus* in Raw Milks E R Jones—p 357  
Agglutination Test for Serologic Diagnosis of Syphilis F M Berger—p 363

**Adrenal Carcinoma and Its Endocrine Diagnosis**—Anderson, Hain and Patterson report a case of amenorrhea of six months duration gain in weight and slight hirsutism in a woman aged 25. Physical examination excluded pregnancy. After sensitivity of the endometrium was demonstrated by an estrogen withdrawal bleeding an attempt was made to induce ovulation by administering pregnant mare's serum. The pregnandiol excretion was measured to determine the existence of a functional corpus luteum. Both before and after the administration of pregnant mare's serum the urinary pregnandiol value was high around 12 mg per day. A negative Aschheim-Zondek test confirmed absence of pregnancy. Since the only condition in which pregnandiol has been recovered in such amounts in the presence of prolonged amenorrhea unassociated with pregnancy is hyperplasia or tumor of the adrenal cortex a provisional diagnosis of adrenal tumor was made. A very high urinary excretion of 17-keto steroids—215 mg per day—substantiated this diagnosis. The course of pregnandiol excretion was studied and a steady rise in its daily output was found which was interpreted as caused by a rapid growth of the tumor. X ray examination revealed a large mass in the region

of the left kidney. The patient died suddenly from massive pulmonary embolism before the operation could be undertaken. Necropsy showed an enormous tumor of the left adrenal weighing 1,780 Gm. The right adrenal was atrophic, weighing one half of the normal. Microscopic examination showed the tumor to be a carcinoma of the adrenal cortex. The authors stress the importance of high titers of pregnandiol and 17-keto steroids excretion in cases presenting amenorrhea or/and virilism for the diagnosis of hyperplasia and tumor of the adrenal cortex.

### Lancet, London

2 211-242 (Aug 21) 1943

- Treatment of Head Wounds Due to Missiles Analysis of 500 Cases P B Ascroft—p 211  
Toxicity of Tannic Acid J M Barnes and R J Rossiter—p 218  
\*Liver Function in Rabbits After Injection of Tannic Acid E J Clark and R J Rossiter—p 222  
\*Combined Action of Antitoxin and Local Chemotherapy on *Clostridium Welchii* Infection in Mice J McIntosh and F R Selbie—p 224

**Liver Function in Rabbits After Injection of Tannic Acid**—Liver damage after tannic acid injection has been demonstrated microscopically by several investigators. Clark and Rossiter show that there is also impaired liver function as measured by the intravenous galactose-tolerance test of King, Harrison and Delory. In the intravenous test 1 Gm of galactose per kilogram of body weight was injected into rabbits. The blood galactose was determined by the ferricyanide method after previous removal of the dextrose by yeast fermentation. The galactose tolerance test revealed a depression of liver function after the subcutaneous injection into rabbits of from 100 to 750 mg of tannic acid per kilogram of body weight. This impairment of hepatic function has also been observed after intravenous injection of tannic acid in doses of from 5 to 10 mg per kilogram of body weight. The observation that a decrease in liver function is produced more readily by subcutaneous than by intravenous injection of tannic acid is probably accounted for by continued absorption from the site of subcutaneous injection. Tannic acid applied to an experimental burn affects the animal adversely, and it seems likely that liver deficiency is a factor contributing to the ill effects.

**Action of Antitoxin and Local Chemotherapy on *Clostridium Welchii* Infection in Mice**—McIntosh and Selbie earlier demonstrated that chemotherapeutic substances, particularly penicillin and proflavine, are of considerable value in preventing the development of experimental gas gangrene infection in mice when these remedies are applied locally in the early stages of the disease. In the later stages of the infection when the organisms have invaded the blood stream, the local application of these drugs is apparently of much less value. The authors describe experiments designed to test whether any advantage could be gained by supplementing antitoxin with local chemotherapy especially in the later stages of the disease. On the basis of their observations the authors conclude that antitoxin treatment combined with local chemotherapy is more effective than antitoxin or chemotherapy alone in the treatment of *Cl. Welchii* infection in mice. The results indicate that all patients with gas gangrene should receive adequate doses of antitoxin combined with full local treatment as soon as possible.

2 277-308 (Sept. 4) 1943

- Findings in 262 Fatal Accidents G R Osborn—p 277  
Prophylactic Inoculation with O Antigen of *Bacterium Shigae* W T J Mangan and H Schutze—p 284  
Aminocyclidine Antiseptics Comparison of 2 7 Diaminoacridine 5 Amino-Acridine and Proflavine J Langer and F A Robinson—p 285  
\*Diffavine in Wound Therapy G A G Mitchell and G A H Buttle—p 287  
Serial Leukocyte Counts in Hospital Nurses Not Exposed to Radiation C J C Britton—p 289  
Electrolytic Action in Dental Appliances. A B MacGregor and B W Fickling—p 290  
Cocaine as Aid to Intubation in Infants. Margaret Hawksley—p 291

**Diffavine in Wound Therapy**—Mitchell and Buttle describe observations on the use of diffavine (2 7-diaminoacridine monohydrochloride) in wounds. They used diffavine in 47 patients and proflavine in over 200 cases. Most of the patients treated were battle casualties and the lesions were of

all grades of severity. The impression was gained that disflavine is not quite as effective as proflavine. Disflavine and proflavine are active in vivo against streptococci, staphylococci and clostridia. Disflavine is possibly also effective against *B. pyocyaneus*. Disflavine and proflavine are less toxic than acriflavine.

## 2 309-340 (Sept 11) 1943

- \*Mass Asphyxia. Medical Aspects of Tube Shelter Disaster. K. Simpson—p. 309.  
Gas Gangrene. Active Immunization by Means of Concentrated Toxoids. M. Robertson and J. Keppie—p. 311.  
Factors Affecting Response of Immunized Guinea Pigs to Antigenic Stimulus. P. Hartley, D. G. Evans and Olga M. Hartley—p. 314.  
Persistence of Tetanus Antitoxin in Man Following Active Immunization—p. 316.  
\*Tanret Reaction in Subtertian Malaria. J. W. Howie and R. M. Murray-Lyon—p. 317.  
Plaster Technique in Fractures of Tibia and Fibula. Swallow Tailed Anterior Slab Method. E. A. Nicoll—p. 320.  
Blood Picture After Massive Transfusion. W. H. Hughes—p. 321.

**Mass Asphyxia.**—Simpson gives an account of the circumstances of the shelter disaster in which over 200 people were piled in a tightly wedged heap on a flight of stone steps leading from the street level. In all 161 persons were dead when extricated and a further 12 died after admission to hospitals, 43 other persons made complete recoveries. The cause of death, although expressed generally as asphyxia, was complex. The author shows that emotional, reflex neurogenic, local cardiac and more general tissue chemical changes, direct compression of the chest or abdomen or constriction of the neck, concussion, head injuries and inhalation of vomit may all be operating in groups or together. Many of these are capable of precipitating death within a few seconds. Extricated dead showed changes quite out of keeping with prolonged asphyxia. Danger to life ensues within seconds of the start of events. When emotional, vagal, carotid sinus, chest and abdominal compression, inhaled vomit, biochemical and other less important factors are operating together, only seconds are available to save life. This shelter disaster was no cool physiologic experiment. Factors dangerous to life were being combined in groups throughout that mass of people, and death picked out its victims here and there according to the mathematical whims of these factors. It was for this reason that almost the last person removed from the bottom stood up and walked to the first aid post unaided.

**Tanret Reaction in Subtertian Malaria.**—From observations on European troops in a hyperendemic area of subtertian malaria (southern Nigeria) Howie and Murray-Lyon believe that, properly used, the Tanret test has an even greater value than has been generally realized. They applied the test to every specimen of urine passed by 100 men admitted to the hospital with subtertian malaria. Treatment consisted of a week's course of quinine bisulfate in solution, given in three doses of 10 grains (0.65 Gm.) daily by mouth. Fifty-three soldiers in good health served as controls. They were given 5 grains (0.32 Gm.) of quinine in solution by mouth and their urines were examined for Tanret reactions at intervals of fifteen, thirty and sixty minutes after the test dose and then at hourly intervals until a positive reaction was found. Of the 100 soldiers with malaria, 88 showed a positive Tanret reaction within two to three hours of their first dose of quinine. Of the other 12 cases, 7 showed negative reactions. While the Tanret reactions remained negative the patients were all acutely ill, but after the intravenous quinine the Tanret reaction became positive and recovery was rapid. The remaining 5 showed occasional positive reactions. They were not dangerously ill and were not given intravenous quinine, but recovery was slow. During convalescence, 18 soldiers out of 100 excreted no quinine in the urine for twenty-four hours after a 5 grain suppressive dose. The minimum doses required to produce even one positive Tanret reaction in these 18 men varied between 10 and 40 grains. The histories of some show that they suffered too numerous attacks for their safety, an average of over seven attacks annually per man. One of the commonest misapprehensions regarding the Tanret test is that a positive reaction is obtained in the urine within fifteen minutes of taking a dose of quinine. Had the authors relied on no more than a single examination at one hour after the dose had been taken they should have recorded only 37.7 per cent as positive, whereas by continuing the examinations at hourly intervals up to five hours they found that all of 53 soldiers in normal health who had

taken 5 grains of quinine gave positive reactions. The Tanret test is valuable in controlling the therapy of acute attacks. When Tanret reactions were completely absent during the treatment by mouth, the patients were all dangerously ill. Intravenous administration of quinine to such men was always followed by a rapid improvement accompanied by positive Tanret reactions.

## - 2 341-372 (Sept 18) 1943

- \*Local Therapy of War Wounds. I. With Penicillin. R. J. V. Pulvertaft—p. 341.  
Therapeutic Uses of Thorium X. H. Corsi—p. 346.  
\*Action of Nicotinic Acid on Carbohydrate Metabolism. F. J. Newahl—p. 348.  
Treatment of Burns with Triple Dye Soap Mixture. C. N. Robinson—p. 351.  
Aetiology of Cardia. Treatment with Nitrites. A. H. Douthwaite—p. 353.  
Control of Ulnar Deviation of Fingers in Rheumatoid Arthritis. D. C. Bodenham—p. 354.  
Bacterial Endocarditis Associated with Coagulase Negative Staphylococcus Albus. A. C. Cunliffe, G. G. Gullam and R. Williams—p. 355.  
Rapid Test for Bromide in Blood and Urine. T. C. Hall—p. 355.

**Local Therapy of War Wounds with Penicillin.**—Pulvertaft reports that samples of sodium and calcium salts of penicillin were sent to the Middle East forces and a number of battle casualties were treated with them. As a preliminary the wounds were treated with an aspirating device similar to that used in empyema. The author thinks that some such device should be used always in conjunction with local therapeutic agents, since it is of little use to float these on a sea of pus. The penicillin salts were used as a powder, as a spray and as a wet dressing covered with soft paraffin gauze. The liquid was always painless, the powder in one case caused pain for thirty minutes. No deleterious effect was noted on wounds, but in 2 cases, when the calcium salt was injected intrathecally, severe reactions were noted. In 15 cases treated with penicillin salts there was a uniform and almost complete drop within twenty-four hours in the numbers of gram-positive organisms, including clostridia, staphylococci, streptococci and corynebacteria. Gram-negative organisms were not affected. Therapeutic results were excellent. The solid drug was introduced into a cerebral abscess cavity without deleterious effect. A few experiments with *Penicillium notatum* culture filtrates, made locally, gave satisfactory results.

**Nicotinic Acid and Carbohydrate Metabolism.**—Newahl reports observations on the action of nicotinic acid on carbohydrate metabolism in 15 nondiabetic subjects and 12 diabetic patients. The blood sugar depression curve and the effect of nicotinic acid on the arteriovenous difference in dextrose and on the response to injected insulin suggest that nicotinic acid may potentiate the action of insulin. The administration of nicotinic acid amide improved the carbohydrate tolerance of diabetic patients.

## Helvetica Medica Acta, Basel

### 10 3-256 (April) 1943 Partial Index

- Eosinophilia, Eosinophilic Leukocytosis, Pseudoleukemic Eosinophilia. R. M. Tecoz, L. de Weck and Fröhner—p. 17.  
\*Resorption of Iron in Pernicious Anemia. G. Hemmeler—p. 23.  
Chronic Hemolytic Anemia with Nocturnal Hemoglobinuria. R. Heglin—p. 27.  
Familial Hemolytic Hypochromic Anemia. K. Rohr—p. 31.  
Behavior of Blood Sugar in Experimental Carbon Monoxide Poisoning and in Nitrogen Inhalation. S. Moeschlin and W. Wildermuth—p. 39.  
Nephritis and Nephrosis. W. Frev—p. 51.  
Cardiopulmonary Function in Double Pneumothorax. E. Jequier-Doge—p. 71.  
\*Temporary Eosinophilic Pulmonary Infiltration. Summary of More Than One Hundred Observations. C. Maier—p. 95.  
Significance of Sympathetic Structure for Development of Bronchial Asthma. B. Steimann—p. 111.  
Renal Complications of Recklinghausen's Disease. R. S. Mich and A. Perrot—p. 237.

**Absorption of Iron in Pernicious Anemia.**—According to Hemmeler the iron content of the serum of patients with pernicious anemia is elevated, a fact which is partly explained by the augmented hemolysis and partly by the diminished iron requirements of the bone marrow due to impaired maturation of erythrocytes. The high iron content of the serum is not merely a passive phenomenon but is an active manifestation in the regulation of the serum iron. The high iron content of the blood serum makes possible maximum filling of the erythro-

cytes with hemoglobin. In this manner the numerical deficiency of erythrocytes is compensated by their quality. In the course of treatment with hepatic extracts the iron content of the serum becomes reduced and the depots are emptied. The iron eventually assumes a hypochromic aspect since the iron depots no longer suffice for the production of the hemoglobin of the newly formed erythrocytes. The author presents plotted curves which indicate the variations in serum iron during liver treatment and the changes in the number of reticulocytes. A considerable reduction in the serum iron is noticeable on the day after the beginning of liver treatment. In certain cases the iron depots do not suffice for the needs of the bone marrow and iron treatment becomes necessary. Otherwise pernicious anemia will not be compensated in spite of the continuation of liver therapy. To insure absorption of iron the author recommends the use of a stabilized ferrous salt which can be absorbed without the aid of the hydrochloric acid of the organism, but even with this preparation the iron absorption of the patient with pernicious anemia is less than that of a normal person. This is not surprising in view of the atrophy of the intestinal mucosa which exists in pernicious anemia.

**Temporary Eosinophilic Pulmonary Infiltration**—On the basis of observations on more than 100 cases and the reports in the literature Mayer is convinced that temporary pulmonary infiltrations with blood eosinophilia first described by Löffler in 1932 are of an allergic nature. The temporary infiltrations of patients with asthma, which have been known for a long time, are regarded by the author as pathologically identical with the eosinophilic infiltration. An eosinophilic pneumonia is the anatomic basis of the syndrome. The allergens in question are proteins. The determination of the antigen is valuable for the diagnosis as well as for the measures to be taken in the individual case. The author's material contained no cases in which eosinophilic infiltration was definitely the manifestation of a specific tuberculous hyperergic reaction. It is probable, however, that patients with a history of tuberculosis may react with an eosinophilic infiltration. Atypical eosinophilic infiltrations do occur. Some forms persist for weeks or even for months. These cases require careful observation because eosinophilia occurs sometimes in early tuberculous infiltrations.

## Archivos de Oftalmologia, Buenos Aires

18 125-178 (March) 1943 Partial Index

Sulfonamide Therapy in Trachoma. V. A. Victoria and M. Artigas—p. 155

\*Syphilis of Conjunctiva. J. L. Castillo—p. 165

**Syphilis of Conjunctiva**—Syphilis of the conjunctiva is rare. It may appear as a chancre, as simple conjunctivitis as scleroconjunctival infiltration and pseudotrachoma of the tarsal conjunctiva and as gumma of the eyeball. There are no references in the literature to hereditary syphilis of the conjunctiva. A girl aged 10 years had subacute inflammation and infiltration of the cornea which simulated tuberculosis. The Kahn reaction was negative. The Mantoux test at 1:1000 dilution was strongly positive. Antituberculosis treatment failed. Antisyphilitic therapy was administered because of the moderate hepatomegaly and splenomegaly, a mild diffuse adenopathy and a high palate. The Kahn and Kline tests became weakly positive in the course of antisyphilitic therapy. Rapid improvement and cure of the conjunctiva followed. The case was diagnosed as hereditary syphilis of the conjunctiva.

## Ophthalmologia Ibero Americana, Buenos Aires

4 405-574 (No. 4) 1943 Partial Index

Treatment of Corneal Diseases by Riboflavin. S. Barrenechea, R. Contardo, and J. Arentsen—p. 405

The Use of Vasodilators in Acute Fundus Diseases. F. C. Cordes—p. 434

**Riboflavin for Corneal Diseases**—Barrenechea and his associates treated with riboflavin 109 patients presenting corneal ulcers and corneal vascularization of various causes. In 70 per cent of the cases the disappearance of ulcers and vascularizations was remarkably rapid. The average time for the complete healing of the ulcers was seventy hours. The vas-

cularization disappeared in three days to two weeks. The treatment failed in 30 per cent of the cases, 15 per cent of which were shown to be tuberculous ulcers which flared up on the administration of riboflavin.

## Prensa Medica Argentina, Buenos Aires

30 1035-1084 (June 9) 1943 Partial Index

Gastrointestinal Ulcer. M. R. Castex, A. L. C. Maggi, and H. E. F. Stocker—p. 1037

Asymptomatic Aglycemia in Diabetes. Teresa Malamud and N. Moguilner—p. 1045

\*Pathogenesis of Acute Pancreatitis. W. Tejerina, Fotheringham—p. 1068

**Pathogenesis of Acute Pancreatitis**—Tejerina Fotheringham believes that infected biliary lithiasis is the cause of acute pancreatitis. He identified *Clostridium perfringens* in cultures from the bile of the common bile duct, from urine and from fragments of pancreas of patients with acute pancreatitis. The organism was isolated in all acute cases. The collapse which is observed early in the course of acute pancreatitis is a symptom of infection similar to that which is caused by toxemia in burns. Operative treatment of biliary lithiasis is the best preventive measure against acute pancreatitis. The common bile duct, the sphincter of Oddi and the papilla of Vater are carefully examined during the operation. Residual lithiasis of the common bile duct is thus prevented. Early injections of coli antiserum and of *perfringens* antiserum in repeated doses exert a favorable effect on the collapse and the symptoms of acute pancreatitis. Morphine and pantopon are interdicted. Atropine and splanchnic anesthesia are useful in allaying pain, dyspnea, cyanosis and vomiting. Roentgen irradiations are indicated after recovery in order to effect gradual disappearance of the residual epigastric inflammation. Operative intervention on the biliary tract is indicated after recovery from pancreatitis as soon as the patient is strong enough to tolerate the procedure.

## Semana Medica, Buenos Aires

50 1399-1454 (June 24) 1943 Partial Index

Diagnosis of Pulmonary Carcinoma. V. E. de Pablo—p. 1399

\*Clinical Significance of Bleeding Nipples. A. P. Cinelli—p. 1409

**Clinical Significance of Bleeding Nipples**—One hundred and thirty-six cases of breast disease were observed by Cinelli. Six (4.4 per cent) presented a bloody discharge from the nipple. The most frequent causes of this symptom are mammary carcinoma, cystic disease and intracanalicular papilloma. Less frequent are endocrine disturbances and trauma. In 5 of the 6 cases reported the lesion proved to be neoplastic, being a benign tumor in 4 and a malignant neoplasm in 1. In almost every instance the bloody discharge was an early and sometimes the only symptom of the pathologic condition of the breast.

## Archiv für Gewerbepathologie, Berlin

11 131-310 (Dec. 31) 1941 Partial Index

\*Disturbances of Liver with Special Reference to Cirrhosis of Liver from Arsenical Poisoning. P. Rossling—p. 131

\*Importance of Vitamin Deficiency of Diet in Arsenical Poisoning. E. Zimmermann—p. 153

Disease of Lungs Due to Inhaling Porphyr Dust. W. Hortsch—p. 160

Danger of Lead Poisoning by Admixture of Tetraethyl Lead as an Anti-knock Agent. H. Wanek—p. 165

Incidence and Cause of Furunculosis in Miners and Campaign Against It. K. H. Scholzke—p. 170

Metal Welder's Disease in Nonwelders. H. Wanek—p. 179

Occupational Poisoning by Carbon Disulfide. F. Warnecke—p. 198

Hazards of Tetraethyl Lead Poisoning. H. Kraut and G. Lehmann—p. 256

**Cirrhosis of Liver from Arsenical Poisoning**—The toxic effect of arsenic on the liver varies depending on the duration and the dose of the drug. Involvement of the reticulo-endothelial system, desquamation and necrosis of liver cells, simple catarrhal jaundice and acute yellow atrophy were present in acute cases of arsenical poisoning. Fatty degeneration, necrosis of liver cells, a proliferative process of the bile ducts and occasional periportal proliferation of connective tissue were demonstrated in chronic cases. A short but massive effect of the poison may result in death. Compensation may be more or less completely restored, but failure of compensation may result from chronic effect of a small dose of poison. The



occurrence of an atrophic cirrhosis (Laënnec's cirrhosis) due to arsenical poisoning alone does not seem probable. Simultaneous lesions caused by other agents played an important part in all the published clinical cases. Among them were alcohol, lead, nicotine, copper, infections, metabolic disturbances and cachexia. One should be cautious in evaluating results of arsenical poisoning in rabbits, since coccidiosis occurs frequently in these animals and resembles cirrhosis in its characteristics. Mild periportal proliferation, but not cirrhosis, could be experimentally produced by arsenical poisoning (Stoeber). The combined effect of several poisons (lead, arsenic) seems to be of particular importance. Cirrhosis results from the cumulative and supplementary effect of several substances. Chvostek's concept of diathesis of connective tissue and of abnormal predisposition to the development of cirrhosis suggests that the toxic effect of the poison is required only as an exciting agent. Cirrhosis in vine dressers should not be considered an occupational disease caused by arsenical poisoning.

**Vitamin Deficiency in Arsenical Poisoning**—Zimmermann demonstrated that the toxic effect from prolonged feeding of white rats with arsenic trioxide was greater in animals on a diet deficient in vitamin A and B than in those on a normal diet. The arsenic had no effect on the symptoms of avitaminosis. There was no striking difference in the storage of arsenic in the liver of animals placed on a vitamin deficient or on a normal diet. Neither were such differences revealed on microscopic examination. The exaggerated susceptibility to arsenic trioxide of rats placed on a vitamin deficient diet suggests the importance of proper and highly valued vitamin supply in the diet of workmen who are exposed to poisoning in industry.

### Deutsche Zeitschrift für Chirurgie, Berlin

255 173-416 (Feb. 19) 1942 Partial Index

- \*Peritonitis Fibroplastica W. Hartmann—p. 173
- Clinical Experiments with Sulfathiazole in Surgery O. Schürch and G. Neff—p. 216
- Arteriography, Procaine Hydrochloride Infiltration of Sympathetic Nerve and Sympathectomy in Lesions Produced by Freezing A. Jung and H. Fell—p. 249
- Treatment of Trigeminal Neuralgia W. Sorgo—p. 295
- Treatment of Massive and Continuous Hemorrhage in Duodenal Ulcer E. Seifert—p. 301
- Extra Articular Implantation of Os Parum in Treatment of Habitual Dislocation of Shoulder S. Orell—p. 329
- Incidents after Intravenous Injections of Serum W. Lichhoff—p. 378
- Question of Increased Mineralization in Fracture Repair Demonstrated on Roentgenologic Examination G. Krockert—p. 398

**Fibroplastic Peritonitis**—Hartmann reports 4 cases of chronic fibrous encapsulating peritonitis in which operation was performed at Rieder's surgical clinic in Leipzig. The patients were from 14 to 40 years of age. Obstructive symptoms were present. At operation the small intestine was found to be involved in all cases. A part of the small intestine which was not involved was seen to enter the membrane, while another short segment of the ileum emerged, so that an afferent and efferent limb similar to a hernial sac could be distinguished. The membrane covering the peritoneum was several millimeters thick and adhered loosely to the serosa, interfering with the motility of the small intestine. Recovery resulted from excision of parts of the membrane which enclosed the small intestine. "Decortication" thus appears to be the method of choice. Enteroanastomosis performed in 2 of the 4 cases resulted in only temporary improvement. Satisfactory results persisted as late as eleven years after the operation. Genesis of this rare disease has remained obscure and its evaluation has been made difficult by the fact that many transitional types were found varying from a membrane covering intestinal loops which were not adherent to one another to a sac-like intestinal mass involving adjacent organs. Inflammation possibly played a role in the author's cases, but there were no indications as to any specific type. A certain parallelism in the localization of abdominal grip and fibroplastic peritonitis suggests that the condition may be a sequel of abdominal grip. The majority of the cases, however, have no history of a previous grip. Parietal mesenteric hernia is the only type of malformation which might be considered as a primary cause of fibroplastic peritonitis. A secondary inflammatory process may obscure the clinical picture. Total or partial enclosure of the small intestine by the mesocolon is theoretically possible and would supply an explanation

for the emergence of one part of the small intestine from the hernial sac-like membrane and for the duodenal stenosis which was found on roentgenographic study of two of the author's cases. The etiologic concept of inflammation is alone not sufficient to explain the almost regular finding of a palpable tumor in the left mesogastric or hypogastric region and the regularity of the detachable membrane.

### Munchener medizinische Wochenschrift, Munich

89 25-46 (Jan. 9) 1942 Partial Index

- Psychopathologic Observations During First World War and During This War Differences and How to Explain Them. G. Storring—p. 25
- \*Action of Carbon Dioxide in Epilepsy and Dementia Precox on Basis of Electroencephalographic Observations A. F. Kornmüller—p. 30
- \*Agglutination on Dried Blood in Infectious Diseases and Its Employment in Epidemic and Endemic Typhus W. Steuer—p. 33
- Progress in Conservative Treatment of Myoma E. Vogt—p. 37

**Action of Carbon Dioxide on Electroencephalographic Changes in Epilepsy and Schizophrenia**—Kornmüller investigated the influence of inhalation of carbon dioxide on the electroencephalographic changes in epilepsy and in dementia precox. Patients were subjected to electroencephalography while they breathed alternately ordinary air and 5 or 3 per cent carbon dioxide in pure oxygen. These studies were made on 40 patients, most of whom had either epilepsy or dementia precox. The observations demonstrated that carbon dioxide may decrease or completely counteract the abnormal electroencephalographic manifestations of these diseases. Carbon dioxide, especially its deficiency (hypocapnia), acts directly on the brain, because it is an adequate stimulus for certain parts of the brain. Carbon dioxide increases the cerebral blood perfusion, whereas its lack reduces it. Carbon dioxide also plays a part in tissue respiration. Further investigations are necessary to determine which of the factors assumes the decisive role. The author's observations indicate that some patients with epilepsy or with dementia precox are more or less continuously, and not only during hyperventilation, in an abnormal state that can be counteracted by carbon dioxide. Electroencephalography indicates that this condition involves chiefly parts of the frontal brain which are connected with the midbrain and the hypothalamus. It is possible that these parts of the brain are diseased or that carbon dioxide represents an adequate stimulus for some of these parts. This is also indicated by the effect of voluntary hyperventilation in epilepsy. It is probable that therapeutic effects may be expected from the use of carbon dioxide in epilepsy, dementia precox and other brain diseases. The effects of metrazol, insulin and electric shock treatments may be partly due to the fact that they increase the carbon dioxide content of the brain and blood.

**Agglutination Test on Dried Blood in Typhus**—Steuer describes the technic of the agglutination test for typhus using a suspension of killed proteus X19 as reagent. By using formaldehyde treated bacterial suspensions as reagents the test can be also used for typhoid, paratyphoid and dysentery. The agglutination test on dried blood provides a rapid method for systematic serologic examinations on large numbers of persons in the environment of patients with typhus in order to detect mild, atypical and unrecognized cases. The author's studies indicate that children may have typhus in a mild and unrecognized form. The same applies to young persons and even to some adults, who may have the disease in an ambulatory form. In childhood and youth there seems to exist a natural protection which decreases in adult life. This resistance differs individually. Children and young persons have been known to develop the classic form of typhus. These observations apply to people among whom typhus has long been endemic. Latent infections occur in such endemic regions. Highly positive Felix-Weil reactions are occasionally observed in persons of all ages who are not aware of having had typhus and who had not been immunized against it. The Rickettsia agglutinins performed in some of them also were positive. The author stresses that the dry blood test described is to be used for environmental examinations in order to detect all, even the mild latent and asymptomatic cases. The ambulatory and asymptomatic cases are to be included in the isolation and delousing, since they may spread the disease.

## Book Notices

**Manual of Fractures Treatment by External Skeletal Fixation.** By C. M. Shaar, M.D., F.A.C.S., Captain, Medical Corps, United States Navy, and Frank P. Krouz, Jr., M.D., F.A.C.S., Lieutenant Commander, Medical Corps, United States Navy. Cloth. Price \$3. 3p. 300 with 148 illustrations. Philadelphia & London: W. B. Saunders Company, 1941.

The purpose of this book is to meet the current need for the treatment of fractures where routine methods are not practicable. It is a handbook for the surgeon interested in external fixation. The authors discuss the pros and cons involved in the use of plaster of paris, skeletal traction, balanced traction, internal fixation and external fixation. They prefer the Stader splint over others for external fixation. If the correct technique is employed with meticulous attention to detail they give assurance that the results will be gratifying. They describe the method they have used for two years. A chapter on a roentgenographic study of bone reaction and changes around pin holes and fracture sites is instructive also a chapter on anaesthesia in fracture treatment and another on shock in fractures. One of the most interesting sections is on 'pin seepage' a subject that has caused much controversy. The authors have had infection from pins in 157 consecutive cases. They differentiate sharply between ordinary pin seepage and actual infection about the pin sites. A small amount of seepage occurs in about 10 per cent of cases. They caution against premature disruption of fixation especially in compound fractures, because of this contingency. Errors in treatment by external fixation are enumerated. Delayed union and nonunion are discussed. Special fractures involving the mandible, clavicle, humerus, radius, ulna, femur, pelvis, tibia, fibula and os calcis are reviewed briefly. Other sections consider compound fractures, osteomyelitis, old ununited fractures, malunion of fractures, arthrodesis of joints and bone grafts. The fractures occurring in the military services and the treatment of fractures at sea are discussed.

**Psikhoфизиология маскировки и разведки.** [By] K. Kh. Kekcheev. [Psychophysiology of Camouflage and Disguise.] Paper. Price 5 rubles. Pp. 108 with 11 illustrations. Moskva: Gosudarstvennoe izdatel'stvo Sovetskaya nauka, 1942.

This monograph reports studies carried out in the Moscow Institute of Psychology, dealing with the physiology and psychology of camouflage. According to the author, types of camouflage, as well as modern combat itself, are to a considerable degree determined and limited by our visual and auditory receptivity. These senses can be improved or intensified, for the purpose of observing the enemy's movements in a number of ways, such as substituting one sense for another, resorting to the use of special apparatus selecting men with highly developed visual or auditory senses and giving special training to these senses. One's position and maneuvering may be camouflaged (a) by utilization of the inadequacy of human visual and auditory acuity (this refers particularly to perception of light, color and sound), (b) by rapidity of movement and (c) by recourse to emotional factors which interfere with visual and auditory performance. The application of the physiologic method to the practice of camouflage under combat conditions is new and interesting. Unfortunately, this monograph will be largely inaccessible to our readers because it is written in Russian without the customary summaries in either English or French.

**Annual Review of Biochemistry.** Volume XII. James Murray Luck, Editor. James H. C. Smith, Associate Editor. Cloth. Pp. 704. Stanford University P. O. Annual Reviews, Inc. 1943.

The annual reviews of this series are now widely known and appreciated in scientific circles. This volume contains reviews of some twenty four subjects in the field of biochemistry. They cover a wide range of subjects such as the chemistry of the hormones, water soluble and fat soluble vitamins, mineral nutrition, the electron microscope in biology, and the chemistry of viruses. Extensive bibliographies and author and subject indexes add materially to the value of the reviews.

**Pye's Surgical Handicraft. A Manual of Surgical Manipulations. Minor Surgery and Other Matters Connected with the Work of Surgical Dressers, House Surgeons and Practitioners.** Edited by Hamilton Bailey, F.R.C.S., Surgeon, Royal Northern Hospital, London. Thirteenth edition. Cloth. Price 4s. Pp. 536 with 331 illustrations. Baltimore: William Wood & Company, 1912.

The resiliency of the British as they continue to publish arouses complete admiration. This book enters its thirteenth edition during a span of nearly sixty years. Twice bombed out it now appears in definitely improved form. The many techniques and details of procedure that are casually mentioned in school and have to be learned at the bedside often with considerable embarrassment to intern and patient alike, are well described. They range from the proper manner of putting on rubber gloves to the management of a T tube inserted in the common bile duct. Many of the descriptions are accompanied by excellent photographic reproductions and drawings to emphasize important points. The complete coverage of minor surgery and common accidents befalling the novice bespeak the many years of experience which have molded the foundations for this book. It has the added advantage of not presenting too many ways of doing the same thing. This work on surgical handicraft can benefit any intern as well as others whose work with patients is with hand as well as head.

**The Modern Treatment of Syphilis.** By Joseph Earle Moore, M.D., Associate Professor of Medicine and Adjunct Professor of Public Health Administration, The Johns Hopkins University, Baltimore, with the collaboration of Jarold E. Kemp, M.D. and others. Second edition, second printing with Chapter XXXIII Intensive Arsenotherapy of Early Syphilis Completely Rewritten and Chapter XXXIV Venereal Disease Control in the Army and Navy Newly Introduced. Fabrikoid. Price \$7. Pp. 717 with 109 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1943.

The need for this printing was due to the excellent reception given the book by the medical profession. It is now the outstanding book for both the practitioner and the student who is concerned with the treatment of patients who have syphilis. Two new chapters have been added, one on the new intensive measures for the treatment of early syphilis and another on the measures adopted by the military forces to control venereal disease. Apparently Moore and his colleagues did not quickly accept these newer methods of treating early syphilis, and the chapter dealing with this subject indicates certain limitations in their practical experience with the various intensive systems that recently have been recommended. The chapter on efforts at control of venereal disease among the military forces emphasizes what can be accomplished in this regard when an adequate organization, trained in this type of work, is permitted to function properly. The book portrays the author's experience at the Johns Hopkins Hospital clinic and is inclined to minimize the observations of other investigators if their results are contrary or divergent. Otherwise the book deserves recommendation to those interested in the treatment of syphilis. The format and printing are excellent.

**The Practice of Local Anesthesia.** By George Bankoff, M.D., D.Ch., F.R.F.P.S., F.M.S., Surgeon, St. John and St. Elizabeth Hospital, London. New edition. Cloth. Price 17s. 6d. Pp. 244 with 181 illustrations. London: William Heinemann Ltd. 1943.

In addition to discussion of the use of local anesthetic agents, the author has attempted to deal with the subject of intravenous anesthesia. The style of expression is often pedantic and vague. Occasional inaccurate statements are noticeable. For example, on page 59 one reads that "10 mgm." of pentothal sodium administered in 5 or 10 per cent solution is adequate for major operations. As treatment for respiratory toxic effects during local anesthesia the author suggests the administration of carbon dioxide, heart stimulants and the application of artificial respiration. No reference is made to the use of oxygen. The book shows lack of familiarity with modern opinions regarding local anesthesia as well as lack of appreciation of some of the important fundamental principles involved in the satisfactory use of anesthetic drugs. The fact should be emphasized however that it was written in Europe, and the author may have presented matters of distinct value to the readers for whom it was intended. This book could scarcely be recommended either as a textbook for students of anesthesia in America or as a reference book for the experienced American anesthetist.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### BLOOD PLASMA BANK

**To the Editor**—We have a blood plasma bank established in this hospital. The appearance of the plasma does not seem normal, here are our difficulties. In flask 1 the blood was taken on August 15 and aspirated on August 21. The plasma is cloudy, of medium tan color and a reddish, flocculent sediment has formed at about 1/2 ounce in about 400 cc plasma. In flask 2 the blood was taken on August 9 and aspirated on August 16. The plasma here is cloudy, of a light pinkish color and a heavy, flocculent sediment, tan in color, has formed of about 1 ounce or more in 400 cc of the plasma. We have so far ten flasks of plasma more or less turbid. As indicated, aspiration was done about one week after collection. Sedimentation was accomplished, but without the use of a centrifuge. The specimens were first stored in a common household refrigerator at a temperature of from 30 to 35 degrees until September 26, when they were transferred to the regular blood bank refrigerator and stored at a temperature of about 40 degrees, which temperature was maintained. Is this plasma safe for blood transfusion? Is there danger of embolism? In using this plasma should any the upper portion be used and the flocculent sediment discarded? Should the whole be centrifuged (this seems most reasonable to me)? Can a centrifuge such as is used for the sedimentation of urine also be used for the sedimentation of plasma by exchanging the containers? Perhaps the change in temperature during storage or the method of sedimentation has some bearing on the peculiar appearance of the plasma. We have several donors willing to donate blood but we have postponed collection in order first to make sure that the plasma so far collected can be used safely or not. I myself prefer the administration of solution of sodium chloride or 5 to 10 per cent solution of dextrose in critical conditions. However, in order to conform with the newer methods and since I have to do some work in pathology I was consulted in regard to our recently established plasma bank.

M D, Ohio

**ANSWER**—Plasma separated after six to seven days of sedimentation at 30 to 35 F should appear as an opalescent to cloudy, light pink fluid with a flocculent precipitate. The pinkish color is due to hemolysis, but the amount of free hemoglobin present should not exceed 4 to 8 mg per hundred cubic centimeters. It is likely that, if the temperature of refrigeration is maintained between 35 and 40 F, the amount of hemolysis will be less than previously obtained.

The flocculent sediment is due mostly to fibrinogen precipitation, which occurs in both citrated blood and in plasma, especially if maintained at refrigerator temperature. Plasma separated by aspiration from such material would not be safe for transfusion because of danger of embolism. It can, however, be readily made safe by filtration through any of the filters capable of retaining small particulate matter. Four layers of 40 mesh gauze thoroughly boiled in pyrogen free distilled water, dried rapidly and properly sterilized, or a 200 mesh single layer stainless steel filter, are suitable for this purpose. The flocculent material can also be readily removed by centrifugation, but unless the centrifuge is of large capacity this procedure would prove lengthy and expose the material to danger of bacterial contamination.

It appears strongly desirable to check the sterility of the plasma after separation. In any case the filtration of the plasma should be resorted to immediately before administration. The administration of solution of sodium chloride or 5 to 10 per cent solution of dextrose cannot in any way take the place of plasma transfusion.

### VIRUS ETIOLOGY OF INFECTIOUS MONONUCLEOSIS

**To the Editor**—I request information concerning the virus etiology of acute infectious mononucleosis.

Lieutenant Colonel, M C, A U S

**ANSWER**—There have been frequent unsubstantiated references to viruses as possible etiologic agents in infectious mononucleosis but extremely little experimental data. The latest report, a series of three articles by L van den Berghe and his associates (*Compt rend Soc de biol* 130 279, 131 156, 132 90, 1939), claims production of the disease in *Macacus rhesus* inoculated subcutaneously with blood of a child afflicted with infectious mononucleosis, and subsequently serial transmission from monkey to monkey by means of Seitz filtrates. The virus was kept alive in a medium suitable for filtrable viruses at least during ten transfers. Inoculation of the fifth and tenth transfers into 1 *Macacus rhesus* resulted after fourteen and twenty-five days in hematologic and serologic (heterophilic antibody tests) changes in 2 animals which satisfied the authors as proving successful transmission of the disease. Tem-

perature of minus 15 degrees C for from thirty to thirty-five days did not destroy the virus.

The report, though interesting, is sorely in need of confirmation, especially in view of two facts. 1 The hematologic data as recorded for the animals and even for the patient, the original source of the virus, are not in full agreement with what some authorities consider characteristic for the disease. 2 It is not stated whether the heterophilic antibodies have been tested for specificity for infectious mononucleosis with the so-called differential test (Davidsohn, Israel Serologic Diagnosis of Infectious Mononucleosis, *THE JOURNAL*, Jan. 23, 1937, p 289). Other reports of successful transmission have been published, but they have no bearing on the question of virus etiology.

### MONKEY NOMENCLATURE

**To the Editor**—In an editorial on poliomyelitis on page 1250 of *The Journal* of Aug. 28, 1943 reference is made to cynomolgus monkeys. I note that some of the material produced symptoms in these but not in other types of monkeys. I should like a little information clarifying what is meant by the term "cynomolgus," and what features identify these as different from other species. I have checked in Webster's New International Unabridged Dictionary, Stedman's Medical Dictionary, Dorland's Medical Dictionary, the Oxford English Dictionary, Parker and Haswell, 6th edition, Textbook of Zoology, and have inquired at the city library but have been unable to find even the word "cynomolgus." As this word is commonly used in medical literature and has been for many years, it seems to me important to have some identifying features firmly established so that one may be certain that research workers who are using animals of this species are being uniform in their identification.

Lyle A Weed, M D, Indianapolis

**ANSWER**—According to the *Encyclopedia Britannica*, 14th edition, volume 18, page 488, the macaques are among the most generally adaptable of monkeys. They are usually omnivorous, and the crab eating macaque of India lives chiefly on Crustacea. They have fore and hind limbs of about equal length. Prominent examples are *Macacus rhesus*, the common rhesus monkey, *Macacus cynomolgus*, the crab eating macaque, *Macacus sinicus*, the bonnet monkey, *Macacus silenus*, the lion tailed macaque, all of India, and *Macacus speciosus*, the red faced monkey of Japan. According to other sources of information it seems that the nomenclature of all macaques and related monkeys is in a state of great confusion. The name *Macacus cynomolgus* no longer applies to any species, but the monkey in question is undoubtedly *Macaca irus* of the East Indian region. It is also known as the "crab eating" or "long tailed macaque" and can be recognized at once by its long tail, no other macaque of this region has a tail longer than the body. It is probably as well to use the common English name until the taxonomy of the group has been more thoroughly investigated.

### SERUM FOR TESTING FOR Rh FACTOR

**To the Editor**—Please inform me as quickly as possible where I can obtain serum for testing for the Rh factor and also the technic.

Milton Semoff, M D, Albuquerque, N M

**ANSWER**—Reliable serum for testing for the Rh factor can be obtained from the Blood Transfusion Association of New York City or from the Certified Blood Donor Service of Jamaica, N Y.

Detailed directions as to the technic of the tests can be found in

Todd, J C, and Sanford, A H. Clinical Diagnosis by Laboratory Methods, ed 10. Philadelphia, W B Saunders Company 1943.  
Wiener A S. Blood Groups and Transfusion, ed 3. Springfield, Ill. Charles C Thomas, 1943.  
Wiener, A S. Hemolytic Transfusion Reactions. III. Prevention, with Special Reference to the Rh and Cross Matching Tests, *Am J Clin Path* 12 302 (June) 1942.

### DICHLOROACETIC ACID FOR WARTS

**To the Editor**—In the issue of *The Journal* for Sept. 25, 1943, the answer to the question "Dichloroacetic Acid versus Trichloroacetic Acid for Warts" does not answer the question asked. The inquirer asked specific questions surrounding the use of bichloroacetic acid as an agent in the treatment of warts. The answer gives a good cost analysis and the results of an experiment when using bichloroacetic and trichloroacetic acid on normal skin, but it does not answer the efficacy of one over the other of these compounds when used on warts. I was interested in this inquiry since pounds when used on warts. I have used bichloroacetic acid in the treatment of Dr E J Kocour and I have used bichloroacetic acid in the treatment of the warts on more than 50 college students when we were associated with the Chicago city colleges. It was our impression that bichloroacetic acid is less painful and more slow acting on the overgrowth of epidermal tissue than the trichloroacetic acid and for this reason it seems to have a slight edge. The usefulness over the trichloroacetic method of eradication of warts by wart is slowly disintegrated and dissolved, possibly by cololytic action by bichloroacetic acid and the usefulness of the part treated is in no way hampered. Some obstinate cases take rather prolonged treatment and application of the acid every other day for several weeks but in general Dr Kocour and I secured rather beneficial results with this type of treatment.

L G Lederer, M D, Washington D C.

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## EYE MANIFESTATIONS OF HEAD INJURIES

DONALD J. LYLE, M.D.  
CINCINNATI

The time seems appropriate for a discussion of eye manifestations of head injuries. There are three great classes in which most of these injuries are found. These are (1) the increasing number of automobile and other travel accidents, (2) the industrial accidents multiplied by the acceleration of production to meet the war demand and (3) the head injuries of war itself. This last class appears of less importance at this time to those of us who remain in civilian practice. Nevertheless there is no noticeable difference between the injuries of these three classes. A head injury from a shell fragment and that from a metallic fragment from the bursting of a rapidly revolving piece of machinery are not unlike. Needless to say, travel and industrial accidents are common among the military forces, and firearm injuries are only too prevalent in civilian life. Injuries to the head produce a number of eye symptoms of great importance. Frequently, from them one is able to determine the severity of the cerebral damage, its location and extent. Eye symptoms are produced by a relatively mild blow to the head, when one sees "stars," as well as from blows severe enough to render the victim unconscious. The chief concern in head injuries is with the brain itself and not the skull, which may have been badly damaged or show no evidence of injury. The result of head injuries, as far as they affect the brain, may be classified as concussion, contusion, laceration and compression. A similar classification might be applied to injuries to the eyeball.

### CONCUSSION

Concussion results in a curtailment, more or less, of cerebral function due to a jarring of the central nervous system. Grossly, no change may be in evidence, molecularly the brain may be disturbed. However, in both the brain and the retina of the eye there is usually some ischemia in the early stage with a later development of venous congestion and edema.

If consciousness is not lost, or on its return, the patient usually exhibits a foggy state of thought with perhaps loss of memory of events just prior to the accident or immediately following it. Vertigo, nystagmus, dizziness and frequently nausea and vomiting indicate a disturbance in the vestibular mechanism. The medullary centers also may be implicated with the production of embarrassed respiration and circulation which may lead to fatal termination.

In these cases during unconsciousness, the pupils are usually constricted and fixed, probably because of

the general cerebral irritation. Irritative conjugate deviation of the eyes may also be present for a short period.

A condition of major importance immediately after an injury resulting in concussion is the state of shock. There may be loss of consciousness for varying periods, during which time the eyes are closed and the corneal reflex is absent. The pupils are frequently constricted and react, if at all, only sluggishly to light. Other general symptoms are rapid pulse, shallow respiration, low temperature, cold, clammy and pale skin and muscular relaxation.

The retina, like the brain, may become ischemic, with later engorgement of the veins and secondary edema from cerebral concussion or from concussion of the globe itself. This is probably due to a sudden vasoconstriction followed by a vasodilatation (Berlin's retinitis or retinitis commotio). This condition may be accompanied by hemorrhages between the sclera and the choroid. The papilla may show slight edema or, at least, some venous stasis. Localized edema of the retina may occasionally be noted, especially at the posterior pole of the eye (angiopathic traumatic edema of the retina of Purtscher). The causes of this condition are hypothetical. They may be due to (1) a forcing of the cerebrospinal fluid from the nerve sheath into the retina possibly through the perivascular lymph spaces, (2) tears in the vessel walls and retina, (3) fat emboli and (4) autonomic disturbances probably chiefly affecting the vascular system.

### CONTUSION

Contusion is a bruising of the brain usually as a result of its sudden impact against the skull wall. The trauma may occur either on the side of the impact or by contrecoup on the opposite side. A skull fracture or laceration of the scalp does not necessarily accompany a cerebral contusion. The most frequent sites of contusions are at the temporal poles and the under side of the frontal lobes, areas past which the nerves and blood vessels course to and from the eyes (fig. 1).

Contusion of the brain results in capillary hemorrhages and edema within its substance. General contusion with edema and petechial hemorrhages is called traumatic encephalitis. The meninges, blood vessels and nerves in the vicinity are usually implicated with the production of meningeal inflammation and adhesions, hemorrhages which may be extradural, subdural or subarachnoid, and paralysis or anesthesia.

The eyeball may suffer contusion resulting in edema, hemorrhages and exudates. These contusions are usually produced by injuries to the orbital tissues surrounding the eye and to the bony wall of the orbit. An example of this is that of a man who was struck by a 0.38 caliber bullet. The bullet (figs. 2 and 3) entered the lower right lid from the left side, just missing the nose and the inferior orbital rim at its entrance.

It passed through the soft tissues on the floor of the orbit and broke through the zygomatic bone to lodge in the soft tissue near the temporomandibular joint. Loss of sight was immediate and there was profuse bleeding from the orbital wound. Bleeding into the



Fig. 1—Basal skull fracture resulting in damage to the right inferior frontal lobe with destruction of the right olfactory and optic nerves

anterior chamber prevented immediate view of the fundus. However, several weeks later retinal photographs were taken which revealed diffuse subretinal hemorrhages in the temporal half of the eye (fig. 4)



Fig. 2—Position of a bullet and its course as indicated by fragments

As the hemorrhage absorbed, vision returned save for a central scotoma of about 10 degrees. There appeared no rupture of the choroid or retina, which seemed likely at the time of the photograph.

#### LACERATION

Laceration of the brain may occur with severe closed injury or with penetrating wounds. Visible damage is present in the brain and meninges, evidenced by loss of continuity of tissue. This may occur on the same side as the impact or on the opposite side (contrecoup). Along with damage to the brain and the membranes, nerves and blood vessels may also be implicated.

In the eye, laceration, or a loss of continuity of tissue, may be due either to rupture of the coats of the eye or to penetration by foreign bodies. The choroid is probably most frequently ruptured, although the retina, because of its delicate structure is usually ruptured with it. The tough sclera is able to withstand greater damage before giving way. Rupture of the choroid is probably more often induced indirectly than directly and more frequently by contrecoup than on the side of the applied force. The posterior pole of the eye is the most common site. The rupture is usually linear and extends in the vertical direction, straight or concentric with the disk margin. In by far the majority of cases it is temporal to the disk. More than one

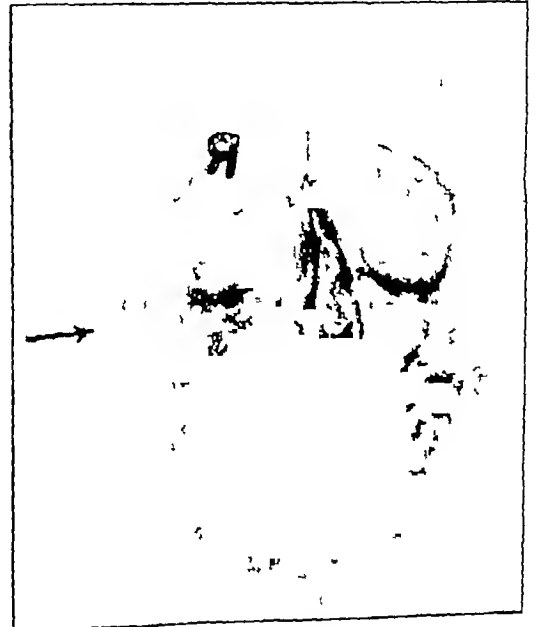


Fig. 3—Fragments of bullet

rupture may occur (fig. 5). Posterior pole ruptures are usually contrecoup, peripheral ruptures which are less frequently encountered are probably due to direct injury to the globe. Detachment of the retina usually resulting from tears may be caused by head injuries. Luxation or dislocation of the lens produced by breaking of the suspensory ligaments also occurs as the result of trauma to the head and eye.

#### COMPRESSION

As a result of damage to the brain and the meninges, with the production of edema, inflammation and hemorrhage and, possibly with the interference with cerebrospinal fluid circulation, pressure develops within the cranium. This causes compression of the brain. Eye changes are among the earliest and most important signs of increased intracranial pressure.

Papillary change, consisting of transparent edema, possibly with a few hemorrhages, is seen in early stages of compression and is usually in direct relation to the degree of severity of the injury. This condition is known as Putscher's retinal lesion or traumatic angio-pathic retinosis. The early ischemia frequently is replaced by a venous congestion with hyperemia of



the papilla. Papilledema, it must be remembered, does not appear immediately. Most observers state that it develops usually between the third and the eighth day, though some report its presence earlier. The swelling from the papilla extends into the retina, and hemorrhages occur frequently in and about the nerve head.

As the compression increases consciousness may be lost. The cornea becomes insensitive with loss of reflexes. On the side of the injury the pupil, which at first was contracted from irritation, becomes dilated and does not react to light. The opposite pupil may remain normal, with normal light reflex. Later it may also contract and then dilate as it becomes involved in the compression.

#### HEMORRHAGE

Cerebral hemorrhages occurring at the time of the injury may be checked spontaneously or they may continue gradually to form hematomas. Hemorrhages may occur later as the result of cleavage or the giving away of damaged tissues. The hemorrhage may be extradural or subdural, subarachnoid or intraventricular or in the tissues of the brain.

At the time of the injury the patient may or may not lose consciousness. If he has been rendered unconscious he may continue in that state for an indefinite period of time. A later lapse or return to unconsciousness after a lucid interval following an injury almost certainly indicates increasing intracranial pressure which may be produced by cerebral edema, hydrocephalus or inflammation but most frequently by hemorrhage.



Fig 4—Damage to the retina from the passage of a bullet through the orbit.

Hemorrhages are classified as to their general location and localized by the special symptoms they produce. Extradural hemorrhage from an injured middle meningeal artery is frequent, although it may occur elsewhere. The following is a history of a severe extradural hemorrhage.

R. R., a young man, fell 35 feet and suffered a linear skull fracture through the right parietal and temporal bones. There was no evidence of depression. He was not unconscious when picked up and was able to answer questions intelligently. But when a doctor saw him an hour later at the hospital he was unconscious. He remained in coma for several days, during which time he would occasionally cry out loudly. There was a paralysis of the left arm and leg subsequent to his admission to the hospital. There was incontinence of the bowels and bladder.

Eye examination showed early edema of the disks. On the third day venous congestion and on the fourth day papilledema developed in both eyes. The right pupil was larger than the left. There was conjugate deviation of the eyes (and head) to the right. Other cranial nerves could not be examined because of the patient's condition. Further neurologic examination is omitted. The spinal fluid pressure was 150 mm of water. The fluid was yellow and contained red blood cells. There was no increase in proteins.

An opening was made in the right temporal region and an enormous extradural hematoma which was well organized was evacuated.

Extradural or subdural hematomas occur frequently in head injuries and may attain great size, producing symptoms of increased intracranial pressure (fig 6). Papilledema develops, the ipsilateral pupil is usually dilated. Eye muscle paralysis is fairly common. If the patient is conscious, homonymous hemianopsia may be found. In infants, subdural hematoma must be differentiated from hydrocephalus, as there is a progressive enlarging of the head as the intracranial pressure from the developing hematoma increases.

Subarachnoid hemorrhages are common at the base of the brain, where most trauma is to the temporal and frontal lobes.

Hemorrhages here occupy the interpeduncular and chiasmatic cisterns through which pass the nerves to the eyes. For this reason paresis or paralysis of the muscles of the eyes and hyperesthesia or anesthesia of the cornea are frequently encountered.

Intracerebral hemorrhages usually occur immediately at the time of the injury and result frequently in instant and continuous unconsciousness. In these cases, symptoms on the part of the eyes may arise. However, if the damage or resulting hemorrhage is large the patients do not usually survive long.

Pressure symptoms from hemorrhage as well as from the other causes, frequently affect the pupils of the eyes. These changes were mentioned in the discussion of compression but their importance as a clinical symptom is so great that their reactions will be described again. Usually on the side of the injury,



Fig 5—A double contrecoup rupture of the choroid and retina from a blow on the eye.

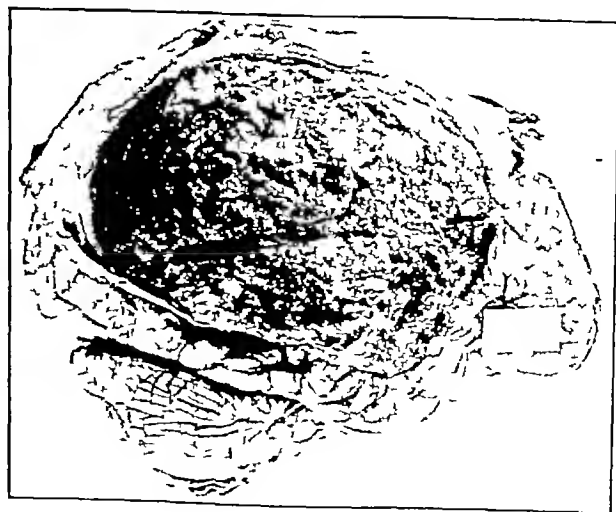


Fig 6—Extensive extradural hematoma from injury to the middle meningeal artery.

the pupil at first, and for a short period only, becomes contracted. It then dilates and becomes fixed. That is, it does not react to light. The other pupil may remain normal in size and reflex action but usually

follows its fellow and becomes dilated and fixed as its nerve supply is involved in the extending hematoma. Whether these pupillary actions are the result of irritation and pressure on the parasympathetic nerve fibers that accompany the oculomotor nerve through the interpeduncular cistern and middle fossa or whether they are caused by irritation or pressure on certain cortical areas which are known to produce pupillary changes is not definitely understood.

If a patient is seen within a short time after injury and has a dilated and fixed pupil on one side, it will be due, almost without exception, to a laceration of the third nerve or its nucleus. On the other hand, if it begins some time after the accident and is progressive, it is almost without exception due to an intracranial hemorrhage, which in most instances is an extradural clot. Lesions of the first type are usually associated with ptosis of the lid, indicating a complete



Fig. 7—Pin shot in the right eye and orbit

nerve lesion. The dilatation that occurs with expanding lesions is almost entirely confined to the pupil and does not involve, as a rule, the lid or the extraocular muscles. It is probably due to the forcing of the tip of the temporal lobe downward by the incisura of the tentorium, thereby exerting pressure on the brain stem.

As the state of the pupil changes frequently following a cerebral injury and as these changes reveal important information concerning the severity of the trauma and the presence of complications, the eye should be kept under continued observation. Because of the importance of pupillary reactions, mydriatics or cycloplegics should be prohibited, as they mask the symptoms. A competent ophthalmoscopist should be able to determine the state of the papilla and the immediate surrounding area of the fundus through an undilated pupil.

Conjugate deviation of the eyes is a frequent symptom of head injuries and is usually the result of pres-

sure on or damage to the cerebral cortex. There occurs usually a horizontal conjugate deviation, which is frequently temporary or fleeting. The condition may be caused by an irritation to, destruction of or pressure on the eye motor area of the posterior third of the middle frontal convolution or of association tracts of fibers passing to this area from the visuopsychic cortical areas in the occipital and inferior parietal lobes (angular and supramarginal gyri). Whether the initial irritation subsides or a compensatory action takes place as the result of a bilateral supranuclear innervation, early conjugate deviations usually disappear. Permanent conjugate deviations are usually produced by brain stem lesions and may occur later. Vertical conjugate deviations usually arise from lesions implicating the upper part of the midbrain and are frequently accompanied by sympathetic symptoms such as somnolence. Reflex conjugate deviations instigated by the temporal and occipital lobes in response to auditory, vestibular and visual stimuli may possibly be found as a result of head trauma when at the time of the injury the special senses have been affected by a detonation, concussion or light flash such as might accompany an explosion.

#### CEREBRAL LOCALIZATION

Cerebral localization is made possible though the knowledge of the anatomy and physiology of the contents of the cranial cavity. We have seen that concussion and shock are general states of disturbed cerebration. Contusion may be general or local, and lacerations may be large or small. The causes of eye and other symptoms may be due to the effect of an irritation or destruction of, or pressure on, centers of nerves controlling visual or other functions. Foreign bodies may penetrate the skull to damage certain areas of the brain. Parts of the fractured skull may do likewise. Hemorrhages from certain vessels usually localize as hematoma, producing symptoms from pressure. Infections may complicate the injury.

Intracranial foreign bodies produce symptoms according to the area they penetrate or damage either directly or through subsequent inflammation and hemorrhage. They may introduce infection, which frequently complicates and renders quite serious an otherwise relatively favorable prognosis.

Damage to the occipital lobe results in visual field changes of a homonymous type. If the anterior portion is involved with the adjacent angular gyrus the visual psychic area is affected, resulting in the inability to comprehend and recognize visual perceptions. On the major side, which is usually the left, irritation may result in visual hallucinations. Sensory aphasia and types of apraxia may also be produced. Visual reflex eye movements may be affected also by damage to this area. Further forward, in the posterior frontal lobes, damage may result in disturbances of eye movements. Similar symptoms may result from injury to the aberrant fibers leading from these areas through the knee of the internal capsule and cerebral peduncle to the eye motor nuclei in the brainstem. The oculomotor, trochlear and abducens nuclei or nerves, as they course to the eye, may be injured. In like manner the facial nerve to the muscles of the lids, and the ophthalmic branch of the trigeminal, which is the sensory nerve of the eye and orbit, may be implicated. Occasionally penetrating foreign bodies may affect the autonomic nervous system.

A youth aged 17 years was examined because of loss of vision in his right eye. The history revealed that two years before he sustained a multiple shot wound in the right eye and orbit. Light projection was present but poor. The eye showed no injection or inflammation. X-ray examination revealed the presence of many pin shot in the orbit several of which were located within the globe (fig 7). The patient was advised to keep the eye under observation, as it might cause trouble at any time.

Several years later, at the age of 20, the patient returned with an acutely inflamed eye. It was slightly proptosed. Hypopyon was present, nearly filling the anterior chamber. The vessels of the globe were much injected. The patient's temperature was 101 F. He was sent to the hospital, where the eye was excised under local anesthesia. An injection of 5 cc. of milk was given. Following this the temperature ranged between 105 and 106 F for seventy two hours instead of the usual rise and fall in the course of six hours. The patient died several days later of cardiac failure. Autopsy was refused.

The history of the case in the interval between the two visits is interesting. The boy had gained very much weight, between 30 and 40 pounds (13.6-18 Kg). He thought nothing of drinking half a case of Vichy water in a day or several pitchers of lemonade at one time. The output was in proportion. His studies at school were a little difficult for him, but he was well and he played center on the football team. There had been no trouble with his eyes until about a week prior to his return, when he stated he had "taken cold" and apparently "it had affected the injured eye."

This case presents a clinical picture of diabetes insipidus with polyuria and polydipsia, a disturbance of temperature regulation and adiposity. This is probably the result of damage to the autonomic nervous system with involvement of the tractus supraoptico-hypophysis to the posterior lobe of the pituitary gland (retinohypothalamic-pituitary fibers).



Fig 8—Multiple skull fractures of the occipitoparietal area

Head injury may result in destruction of sympathetic centers, descending sympathetic fibers through the brain stem and cervical cord, and the ascending cervical nerve and ganglions. The smooth muscles of eye and lids are involved with the production of Horner's syndrome. This consists of miosis, ptosis and a relative (in appearance only) enophthalmos.

## SKULL FRACTURES

Fractures of the vertex of the skull usually do not produce as many symptoms on the part of the eyes as do those at the base, where the many nerves and blood vessels passing to and from the eye and orbit may be implicated. However, fractures of the vault

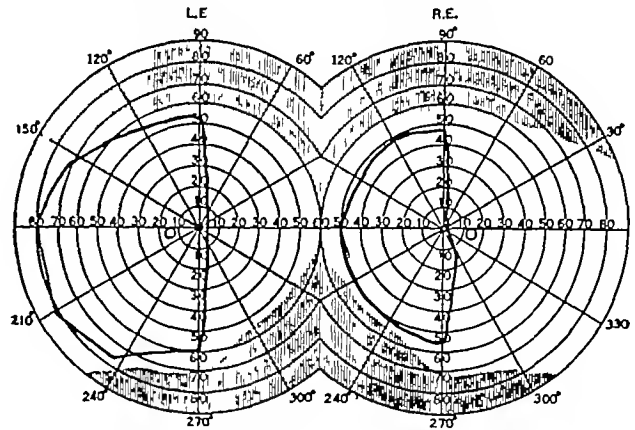


Fig 9—Visual fields showing homonymous hemianopsia from implication of the left optic radiations

may produce eye symptoms by affecting the visuosensory and visuopsychic areas of the occipital and lower parietal lobes and the visuomotor center in the posterior frontal lobes. This may be accomplished through direct damage to the brain or through the pressure of hemorrhages or later by adhesions, cysts and abscesses. The following is an example.

A woman aged 25 suffered a badly comminuted skull fracture with a depression in the left occipital area (fig 8). When first seen, shortly after the accident, the patient was unconscious. The pupils were contracted and equal. There appeared to be a paresis of both external rectus muscles, more pronounced on the right. On return to consciousness, the patient complained of visual hallucinations of a complex form. Ophthalmoscopic examination revealed no edema of the papilla or retina and no retinal hemorrhages. Further examination revealed vision of 20/30 in each eye and the presence of a right homonymous hemianopsia. This visual field change is a common finding in patients with visual hallucinations. A ventriculographic examination of the skull showed the posterior horn of the left ventricle displaced downward and laterally. This portion of the wall of the ventricle, which is partially surrounded by the optic radiations, was the site of the lesion that produced the visual field defect.

Fractures through the frontal areas of the skull may be comparatively insignificant even with implication of the brain, especially the right frontal lobe. If the nasal sinuses or cribriform plate are involved, the chances of infection increase. The orbit is frequently damaged. The eyeball, and more often the optic nerve, may be injured. The following case report is an example.

E. D., a man aged 20, received a penetrating wound through the right frontal area from an automobile accident, which produced a compound comminuted fracture. He was admitted to the hospital with the knob of the windshield frame projecting from the right side of his forehead.

The piece of metal was removed from the right frontal lobe in which it had deeply penetrated along with particles of bone. The right temporal and frontal bones including the roof of the orbit, were fragmented and removed from the wound with the macerated brain tissue.

Eye examination revealed proptosis of the right eye with very slight eye movement. The pupil was partially dilated and did not react to light. No light perception was present. The upper part of the fundus was seen indistinctly and seemed

normal, but the papilla and lower retina were hidden behind an extensive vitreous hemorrhage.

Three weeks later the area of the head wound was bulging and tense. Twenty cc of subdural hydromic fluid was aspirated, the dura was incised and about 20 cc more of sterile fluid was obtained. Two months later a cerebral fungus the size of a walnut had developed and was removed.

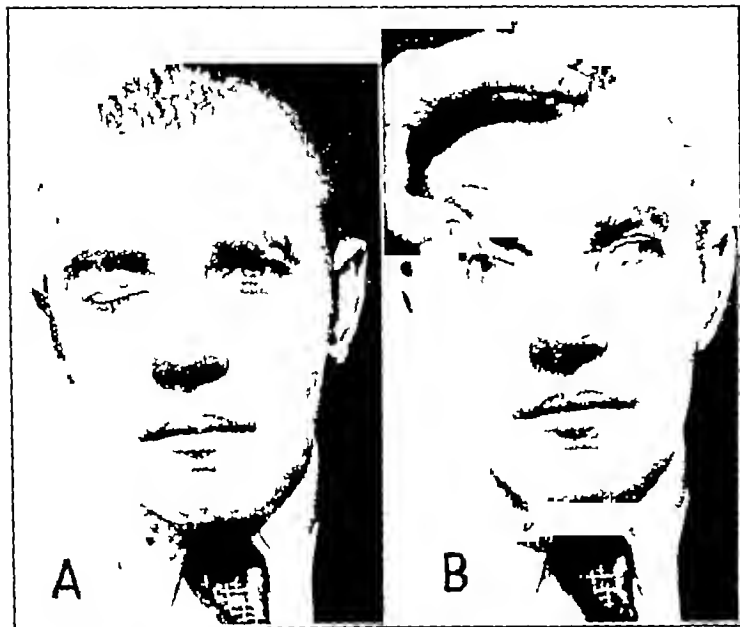


Fig 10—Right oculomotor paralysis caused by a basal skull fracture. A, ptosis, B, dilated pupil and external strabismus.

The eye became phthisical and was enucleated. Plastic surgery of the lids and orbit produced a fairly good cosmetic result. There remains quite a depression in the frontal temporal area where the skull is absent.

Fractures of the base of the skull frequently implicate the abducens nerves as they ascend the brain stem and abruptly turn forward through Dorello's canal and over the petrous ridge, which is a common point of injury. Paralysis of the abducens nerve is often found with increased intracranial pressure, and this finding itself is therefore of no localizing value.

Of the nerves to the eye muscles, the oculomotor nerve is involved next in frequency to the abducens. It may be affected as it passes through the orbital wall or may be damaged by hemorrhages in the interpeduncular space (fig 10). Weber's syndrome, which implicates the emerging oculomotor nerve and the cerebral peduncle producing ipsilateral oculomotor paralysis with contralateral hemiplegia or paraplegia, has been reported as a result of hemorrhages following skull fractures. The trochlear nerve, although it pursues a long course around the brain stem to the orbit, is less frequently affected.

The facial and auditory nerves are possibly more frequently involved in basal skull fractures than are the motor nerves to the eyes. Implication of the facial nerve shows a lower motor type of lesion which affects the closure of the eyelids because of paralysis of the orbicularis oculi. With this condition, when one attempts to close the eyes, the globe is seen to roll upward and outward. This is called Bell's phenomenon. With involvement of the auditory nerve, hearing may be affected and nystagmus and vertigo may indicate vestibular irritation.

The optic nerve may become involved in its course from the globe to the optic chiasm, and other parts of the visual system may also be affected. Within the orbit a lesion between the globe and the entrance of the central retinal vessels, besides damaging the optic nerve, will usually destroy the blood supply to the anterior layers of the retina and to the papilla. A severe injury may produce an avulsion of the optic nerve, in which case there is a complete or partial tearing away of the nerve head from the globe, leaving bloodless vessels and a pale, cavernous papilla (fig 11).

A lesion in the optic nerve farther back, though vision is immediately affected, may not produce evidence of damage in the eye until the atrophy has ascended to the papilla. Pallor of the disk appears at varying intervals, depending on the distance of the injury from the eye (fig 12). Some observers believe that definite atrophy can be noted in three to eight weeks after the injury, however, the time may be much longer.

As a great number of fractures of the base of the skull extend into the orbit and the majority of orbital fractures extend into the optic foramen, the optic nerve is frequently involved in fractures in this location, especially as it is so securely attached to the roof of the canal. As a result of these injuries, vision is frequently seriously impaired by damage from severance of the nerve fibers or pressure on them. If the pressure can be relieved in time, vision may be restored. Therefore, in spite of the usual swelling and ecchymosis, if the state of the patient permits, visual fields should be charted as soon as feasible so that necessary operation can be resorted to with the hope of releasing the pressure on the optic nerve before atrophy develops.

The optic chiasm is well buffered and does not usually suffer in head injuries unless traction on one of the optic nerves tears it. In these cases the chiasm between the decussating nerves usually gives way, resulting in a bitemporal visual field defect.

Infection introduced into the wound may result in meningitis or abscess formation. Adhesions formed either from infection or from injury without sepsis may result in cyst formation, local arachnoiditis or general

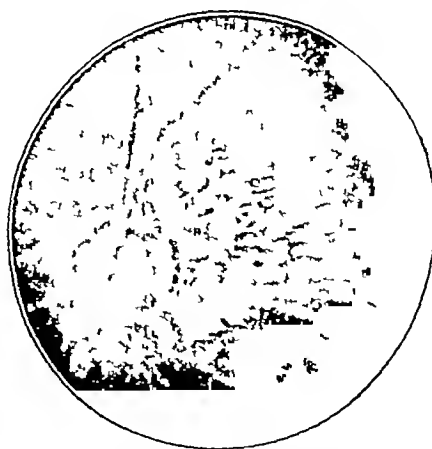


Fig 11—Avulsion of optic nerve resulting in a cavernous optic atrophy and exsanguinated blood vessels.

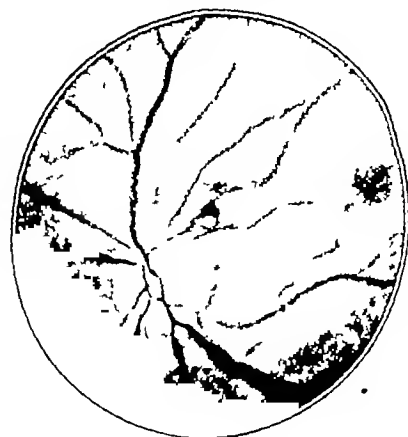


Fig 12—Optic atrophy resulting from an injury to the optic nerve in the optic foramen.

hydrocephalus. Epilepsy may also result from these adhesions. Osteomyelitis, cerebral fungi and other complications may arise.

In basal fractures there may be an injury to the internal carotid artery as it passes through the cavernous sinus. Leakage here results in the formation of an arteriovenous aneurysm. These patients show a

unilateral proptosis with interference with normal eye movements. The lids are edematous, the conjunctiva is chemotic and there is an injection or engorgement of the vessels in the area. The retina and papilla frequently show edema and engorgement. Reduction of vision and occasionally diplopia are complained of by the patient. A bruit is usually heard over the area.

#### CONVALESCENCE AND SEQUELAE

Post-traumatic or postconcussion syndromes are frequently found and may be of functional or organic origin. It has been observed that when the patient is not pampered and consoled he may make a better recovery. If he is gotten up and about as soon as possible and is not kept quiet, he is apt to readjust more quickly and more completely. Worries and concern over the accident may interfere with recovery.

Rapid fatigue on the part of the eyes is frequently complained of, usually along with general exhaustion, unsteadiness, incoordination of movements and affected cerebation. Nystagmus and vertigo occasionally with nausea are common symptoms. Movements of the eyes, usually in all directions, may be an effort. Convergence is difficult. Reading a short period of time tires the patient. Spots "dance" before the eyes. Photophobia is complained of in some instances.

If the nerves or centers controlling eye movements have been implicated, imbalance of the muscles with diplopia, at least in the direction of action of the paralyzed muscle, may remain. Atrophy of the optic nerve, chiasm and tracts may result in loss of vision with ascending optic atrophy.

Visual field changes may remain as the result of irreparable damage to the visual system. Concentric constriction, central scotoma and sector defects are frequently encountered. Occasionally annular or ring scotomas have been reported. These field defects, especially annular and central scotomas and considerably constricted or tubular fields, must be considered in reference to fatigue and hysteria. Concentric constrictions may be due to cortical atrophy or hydrocephalus, although the latter is not found commonly following head injuries. However, although internal hydrocephalus is rare, external compensatory hydrocephalus is observed as the result of the replacement of atrophic brain tissue by the cerebrospinal fluid.

Some investigators believe that the concentric and possibly the annular field defects are confined to the retina of the eyes, possibly the optic nerves, and result from the violent vascular changes and disturbed metabolism produced by the injury.

#### ABSTRACT OF DISCUSSION

DR A D RUEDENANN, Cleveland. One is impressed by the large variety of head injuries that occur. The earliest injury is that of compression occurring at the time of birth, mostly in babies who have had forceps delivery. The additional compression of the forceps to the already compressed head is a factor in the production of hemorrhages at the base of the skull and undoubtedly accounts for a number of cases of squint. Also head injuries occur in the first decade in children who are learning to walk and in careless or unguarded play. In the second decade are injuries associated with more serious and hazardous sports. Beginning in the third decade industrial injuries and accidents are in the majority. Industry has recognized the hazards associated with certain types of work and now provides protecting helmets. It is quite possible that these helmets will decrease the number of injuries as have the goggles diminished the number of eye injuries. Severe intermittent headache subsequent to head injury is an excellent diagnostic symptom when most eye signs have disappeared. Trauma to

the side of the head in the region of the orbit or directly to the eyeball may produce immediate blindness. The force of the blow may be transmitted across the bones of the orbit and produce a compression fracture in the canal, which can be revealed only by planograph method of x-ray. The second serious result of trauma to the orbit is enophthalmos. More serious is pulsating exophthalmos, produced mainly by fracture at the base coming up along the anterior clinoids and producing a tear in the internal carotid artery and the ophthalmic vein, this produces an exophthalmos by increasing the orbital content and is usually accompanied by much loss of vision. Gunshot wounds to the occipital region involving the visual centers give bizarre field changes without any changes in the eyegrounds. Head injuries and litigation are practically synonymous, and it requires careful study to justify a negative finding. The positive findings are usually demonstrable.

DR C W RUTHERFORD, Indianapolis. War wounds are of greater value for research purposes than those met in civilian experience because there are many more of them available at a time and they can be studied in case groups by specially trained investigators. Holmes and Lister (*Brain* 39:34 [June] 1918) studied war wounds of the posterior section of the cranium with reference to their effects on visual fields. The result was a clarifying of cortical localization for macular, paramacular and peripheral vision. Destruction of the margin or lateral surface of the tip of the posterior pole of the brain was exhibited as a central scotoma. Lesions only slightly forward from the tip produced paracentral scotomas, while injuries still more anterior in the area striata damaged the vesual cortex or the optic radiations or both and accounted for sharply demarcated quadrant anopsia, or homonymous hemianopsia to the vertical midline, in contrast to preservation of intact macular vision as met in cases of vascular impairment in civil practice. LaGrange (*Atlas d'ophtalmoscopie de guerre*, 1918, and *Fractures of the Orbit and Injuries of the Eye in War*, 1918) investigated wounds of the anterior section of the head and their typical effects on the eyeball and its contents. Ocular lesions were located uniformly anterior to the point of contact in contusions of the globe. Constant relations existed between the site of a lesion and the course of a projectile. Hole in the macula was long accepted as a result of trauma. Almost any patient can be prompted to recall a bump on the head, but few know their visual acuity prior to such a bump. Military examinations record the visual acuity. Allied reports of ocular complications incident to war wounds (World War I) contain a surprisingly small number of cases of hole. A hole can be formed in a predisposed eye with or without a traumatic contribution.

DR WALTER I LILLIE, Philadelphia. This paper divides the traumas into the main divisions of cerebral concussion, contusions, lacerations, compressions, hemorrhages and skull fractures. The ophthalmologic manifestations are either sensory or motor disturbances. This may be in the form of oculomotor palsies involving either the intraocular or the extraocular muscles and fundal changes in a certain percentage of the cases. The importance of the pupillary changes during the early and late stages, especially noted in the group of compressions and hemorrhages and skull fractures, is stressed by the author. The use of a cycloplegic for a fundal examination masks the important pupillary reflexes which are variable during the course of the condition. If the pupil must be dilated a mydriatic should be used which is fleeting in action and will not mask any change in the pupillary reflexes for any length of time. The fundal changes may vary from vascular manifestations in the form of arteriolar spasm with ischemia, venous congestion, edema of the disk and choking of the disk in the more severe cases. Skull fractures, in my experience usually have normal ocular findings during the hospital stay, but this does not rule out the possibility of ocular damage at a later date, so the prognosis must be guarded. The syndromes of the intracranial pathologic changes are not unlike those produced by vascular inflammatory and neoplastic lesions although the localizing signs may be masked in the earlier stages of the convalescence.

DR DONALD J LYLE, Cincinnati. I wish to thank Drs. Ruedemann, Rutherford and Lillie for discussing the paper for stressing certain phases of the subject presented and for adding interesting material to it.



## INTRAOCULAR FOREIGN BODIES

EDWARD STIEREN, M.D.  
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In writing on this topic my object is to emphasize and reiterate that if prompt and proper methods are adopted many injured eyes will be saved and varying degrees of vision retained and to refute the defeatist attitude that an eye with a foreign body in its interior is potentially a lost eye.

My opinions are mainly personal and based on an experience of more than forty-five years in an industrial community. "What thou seest, write in a book" (Revelation, chapter I, verse 11).

There are several abstract principles to be considered first. The history of the accident is all important, for from it one learns whether one has to deal with a magnetic or a nonmagnetic retained foreign body. If the body is nonmagnetic, recovering it becomes more difficult and the prognosis is less favorable, as it entails additional trauma to a delicate and highly specialized organ already grievously injured.

Every patient with an ocular injury either of the globe or the soft parts, should be given an immunizing dose of 1,500 units of tetanus antitoxin, not particularly for its specific action but as a foreign protein for the production of antibodies and the added resistance this will give to the ocular tissues.

Next in order is the determination of the location and the size of the intraocular foreign body. The wound of entrance can usually be detected if recent by direct examination, staining the eye with fluorescein or mercurochrome facilitates this. In small wounds that penetrate through the cornea slit lamp examination will reveal the path of the foreign body and often the site of its lodgment.

If the media have remained clear the ophthalmoscope will often disclose the position of the foreign body if this is behind the lens, the object will appear fifteen to twenty times larger than it actually is, the dioptric system of the eye magnifying it this much.

If the foreign body cannot be seen, an x-ray localization must be made to determine not only the position but also the size. In borderline cases where it is possible that the piece of metal has penetrated the posterior sclera and lies within the orbit, the localization should be repeated, preferably by another roentgenologist. Any foreign body within the globe will cast a shadow when subjected to x-rays with the exception of optical glass, which contains little or no lead in its composition and is transparent to x-rays.

Should the particle be so small that a negative report is given, repeated plates of different densities should be made, and then one is usually able to determine its position.

With the exception of glass (which appears to be inert) all foreign bodies act as continuous irritants by processes which are partly electrolytic and partly oxidative, metals slowly going into solution in the intraocular fluids. Brass and copper are particularly toxic, and retention of iron or steel is followed by a deposit of iron throughout the eyeball (siderosis bulbi) accompanied by a chronic low grade inflammation of the uveal tract.

A case in point is that of a mill worker who had a minute piece of steel at the periphery of the lens. The eye was entirely quiet, accommodation was not dis-

turbed and he had a perfectly functioning eye with normal vision. As he was above average intelligence the situation was explained to him, that to attempt removal of the foreign body might result in the formation of a cataract, extraction of which would result in aphakia. On the other hand there was a possibility of the foreign body becoming encapsulated and giving no further trouble. He elected the latter course and appeared for inspection at regular intervals for three years with the eye remaining the same. Moving to another city he was lost sight of for five years, and then he appeared with a painful eye, pronounced siderosis and secondary glaucoma, requiring enucleation. There had been no additional trauma. True he had enjoyed normal use of his eye for six or seven years, but the outcome points to the danger of leaving a metallic foreign body within the globe. Glass when retained becomes surrounded by foreign body giant cells and ultimately encysted in scar tissue. I have several cases of glass lying in the bottom of the vitreous chamber readily seen by the ophthalmoscope. One after twenty years has given no further trouble.

In removing sharp foreign bodies from the iris it is advisable to have the patient thoroughly relaxed under intravenous sodium pentothal or a general anesthetic. It can happen under local anesthesia that the patient squeezes against the speculum and the spicule disappears through the iris and zonula to lodge in the vitreous chamber.

When the foreign body lies in the lens the latter should be removed at the same time, with thorough washing out of the anterior chamber. It is all important to extract the lens nucleus even at the expense of a loss of vitreous. This is a better procedure than to postpone removal of lens matter to a future date (hoping for spontaneous absorption), as many eyes are sensitive to lens protein and the evils incident thereto. In addition it lessens the period of convalescence and returns the workman to work sooner.

If the cornea is lacerated and the iris prolapsed, the latter should be drawn out slightly and excised. The corneal wound should be brought together either by direct suturing or with a sliding conjunctival flap that takes in the circumference of the upper half of the cornea and is sutured into the lower fornix. I prefer the flap, as it does not further traumatize the globe and immediately closes the anterior chamber, allowing atropine to exert its effect.

If the wound of entrance involves the ciliary body, I do not try to save the eye but enucleate immediately. It is better to lose one eye than to risk total blindness from sympathetic ophthalmia. This course is recommended by Friedenwald.<sup>1</sup>

In a certain number of cases (3-5 per cent) following perforating wounds of the anterior half of the eyeball there develops an intraocular inflammation which is characterized by its low grade but relentless course, by its resistance to all the usual forms of therapy, by the plasticity of the exudates which accompany it and, above all, by the fact that both eyes, the uninjured as well as the injured, become affected. Aside from its clinical histological appearance little is known about this disease except the fact that enucleation of the injured eye within two weeks of the injury precludes the development of the affection in the uninjured eye.

The number of eyes injured by magnetic in comparison with those by nonmagnetic foreign bodies will vary in different sections of the country. The magnetic

<sup>1</sup> Friedenwald, Jonas S. *The Pathology of the Eye*. New York: Macmillan Company, 1929.

foreign bodies are much more numerous, fortunately, as in this class we have the indispensable aid of the electromagnet versus forceps manipulation and groping in the nonmagnetic group. In my experience about 10 per cent of the injuring materials have been nonmagnetic, and that they gave the poorest results is obvious.

A fairly large piece of copper or brass, coal or stone, wood or lead shot can be felt with a properly designed forceps (such as is made for me by Mueller) introduced closed into the vitreous. With the localization chart directing one's movements and an adequate scleral opening, the forceps is opened and the foreign body is grasped and removed. This may require several attempts and is not good for the integrity of the eye. In this connection it must be remembered that small shot as used in a shotgun are rarely made of lead now but of chilled steel and can be removed by the magnet.

If one fourth of the bulk of the vitreous escapes or if it is much disturbed by instrumental manipulations, the globe develops a minus tension and slowly deteriorates, ending in phthisis bulbi.

For this reason all the various shaped tips that come with a magnet except the cone or olive shaped ones should be discarded and not used in the vitreous. To remove small particles of ferrous metal from the anterior chamber I use the angular tip, which I have had ground down to the size of an iris repositor.

I discarded the use of the giant magnet many years ago because it is cumbersome, too strong and often more harmful to an injured eye than the original insult. Most of the damage to be feared by pulling the fragment forward around the lens is either damage that is unavoidable or damage that is due to the unskilful use of a powerful instrument.<sup>2</sup> In the practice of ophthalmology the value of the electromagnet does not depend entirely on its lifting power but depends more on the saturation of the field. The intensity of the magnetic field depends on the number of amperes multiplied by the number of turns of wire around the core. The smaller the wire, the greater the resistance. Thus the strength of the field is proportional to the number of amperes flowing through it, and since such a circuit follows Ohm's law for direct current the strength of the field is also proportional to the applied voltage, i. e., doubling the voltage will double the field.

This rule holds accurately for field strengths below the "saturation point" of the iron core. Iron is capable of only limited magnetization, of the order of a few thousand gauss, this being termed the saturation point. The use of high voltage—and hence high amperage—in an electromagnet is limited by the magnet's power to dissipate heat. However, if used intermittently and for short periods a hand magnet is not likely to become overheated. Passing 220 volt direct current (available now in most hospitals and clinics for high voltage therapy) through the coil of a magnet up to 25 amperes resistance will about double the magnetic field.

Thus equipped the hand magnet has never failed me, nor is it necessary for the tip of the magnet to come in contact with the foreign body as some operators assert.

The magnetic field decreases proportionately to the size of the tip of the core, the small tips having much less magnetic power than the large one. It is therefore not necessary or wise to introduce a tip into the vitreous,

as the large tip applied to the surgical incision will deliver more magnetism.

My consistent practice is to remove a magnetic foreign body through the cornea when it is anterior to the posterior lens capsule and through a scleral incision when it is in the vitreous, in the choroid or on the optic disk. The wound of entrance can seldom be used, and an incision needs to be made to facilitate removal of the artefact with the least degree of additional trauma. Removal should not be attempted until one knows positively where the object is located and its size. Many different problems will be encountered in removing by the anterior route, each of which the ingenuity of the operator must solve.

The fear of detachment of the retina following trans-scleral extraction is exaggerated. My procedure is to make a conjunctival flap and dissect an opening in the sclera down to the choroid. The knife does not enter the vitreous, and the incision is well above or below the conjunctival incision in order that the two incisions may not come together.

Knowing the size and location of the foreign body, I make the scleral incision large enough to allow the body (now attached to the magnet's tip) to be delivered without tugging. I find that a modified T incision with the vertical arm about half as long as the horizontal allows for an easier delivery. Before the conjunctival flap is sutured into place, and this is the most important step in the procedure, a cotton tipped applicator dipped in pure phenol (carbolic acid) is touched to the scleral incision. This acid acts as an irritant as well as an antiseptic, inducing local choroiditis, which causes adherence of the choroid to the sclera and the retina to the choroid and prevents postoperative separation of the retina. The incision can be ringed with diathermic puncture to achieve the same result, as advocated by others, but this takes time and time is of the essence. I have never observed the retina detach itself when my technic has been used.

I deplore the use of the magnet as a diagnostic instrument to determine whether ferrous metal is within the globe. A live magnet should never be brought to an eye. Only until the method of removal has been determined on and the size and the location of the foreign body are known should the magnet be used. Then the tip of the magnet is placed in the wound of exit and then only should the current be turned on.

Infections and inflammations of the uveal tract limited to the anterior segment of the eye must be combated by the operator's preferred methods. When the sulfonamide compounds first appeared I was encouraged by the immediate favorable result when they were administered internally, then, about the second day, improvement would halt. When penicillin becomes available, perhaps its action will be more reliable and sure against bacterial resistance. In combating infections I depend on systemic shock resulting from injections of foreign protein or intravenous injections of typhoid vaccine. Milk injected into the gluteal muscles is painful and may result in abscess formation. I have had good results from subcutaneous injections of proteolac, but if the reaction produces a body temperature of less than 101 F I change to triple typhoid or typhoid H vaccine, as a temperature of 102 to 103 F is desired.

Should a purulent infection of the vitreous ensue, the case is hopeless and the eye must be enucleated.

An evaluation of the end results in these cases depends on so many factors that reliable statistics are impossible. The structures involved in the injury, the

2. Lancaster, Walter B. The Technic of Extraction of Intraocular Foreign Bodies. *Am. J. Surg.* 42: 14 (Oct.) 1938.

time the foreign body has been retained, its composition and the additional trauma required to remove it are all deciding factors. My most favorable results have been obtained when the wound of entrance was through the sclera. It is remarkable how rarely in such cases the tissues are infected—perhaps the vitreous is a poor culture medium or its viscous structure is germ repellent. At any rate entrance of a foreign body through the cornea is much more liable to be followed by infection.

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#### ABSTRACT OF DISCUSSION

DR. ELBERT S. SHERMAN, Newark, N. J. Faced with the problem of recovering an intraocular foreign body, no one can foretell the ultimate outcome. Factors favoring success are experience, good judgment, ingenuity and proper equipment. Fortunately the invading object is usually magnetizable. In about 10 per cent of Dr. Stieren's cases it was nonmagnetic. In this respect, his experience and mine coincide. Some will take exception to his practice of enucleating immediately every eye in which the wound of entrance involves the ciliary body. This seems unnecessarily radical. In at least 10 to 15 per cent of cases the ciliary body is involved and, as the lens is usually uninjured, the recovery with good vision is probable unless there is other serious damage. Often the passage of a small foreign body through the ciliary body causes but little reaction. Even though the resulting iridocyclitis is more or less severe, and if the eye is not blind, one should wait a week before enucleating. In the meantime active foreign protein therapy, in the form of intravenous typhoid vaccine and the removal of focal infection when present, will often give gratifying results. I have never had reason to regret this procedure and feel certain that many eyes have been saved that would have been needlessly sacrificed by a too hasty enucleation. I want to endorse Dr. Stieren's statement that the fear of detachment of the retina following transscleral extraction is exaggerated. If, as he advises, one does not permit a magnet tip or other instrument to enter the vitreous and applies some suitable cauterizing agent to the scleral incision to cause an adhesive choroiditis, detachment of the retina following the removal of recent foreign bodies will seldom occur, either immediately or later. In many magnet cases akinesia of the orbicularis is helpful, especially if there is likely to be any disturbance of the iris or loss of vitreous. It will prevent the squeezing referred to in the paper.

DR. C. A. VEASEY SR., Spokane, Wash. I employ tetanus antitoxin in all cases in which the possibility of tetanus is present. But in those cases in which the action of foreign protein alone was desired, typhoid vaccine was usually used. The location and size of the foreign body should be determined in every case. If this cannot be done by external examination—the use of the ophthalmoscope or slit lamp—it should be done by a proper x-ray examination. The suggestion that in cases in which the x-rays show the foreign body to be possibly in the sclera or just within or external to the eyeball the x-ray examination should be repeated, preferably by another roentgenologist, seems to me excellent. If the wound of entrance is through the ciliary body, or what Mr. Nettleship called "the danger zone" of the eye, it is my custom to recommend enucleation. A few have declined and escaped trouble, but it is dangerous and, like Dr. Stieren, I have always felt that it was better to lose the injured eye rather than to risk the grave possibility of sympathetic ophthalmia. Dr. Stieren and I are in agreement on the advisability of avoiding the use of the giant magnet and on the employment of the hand magnet after definite localization of the foreign body. I agree that the magnet should never be employed as a diagnostic instrument to determine whether or not a magnetic foreign body is present. It is damaging in many instances and does great harm to an eye which otherwise might have obtained useful vision if localization by x-ray had been employed first.

DR. GEORGE H. CROSS, Chester, Pa. With the advancement of science, steel has been combined with many different substances, including tungsten, tantalum, molybdenum, columbium, cobalt matrix, chromium and nickel, that render it less mag-

netic, so that we have many more cases of nonmagnetic foreign bodies to remove. I must take exception to Dr. Stieren's use of the term "groping" in removing nonmagnetic foreign bodies. With the assistance of a good roentgenologist and using my method devised in 1926, it is possible to apply special forceps and remove the nonmagnetic foreign body from the eye with a minimum of trauma, even though the eye is filled with blood and no view of the interior is obtainable, and many times on the first attempt, thus saving eyes that previously were immediately enucleated. Dr. Stieren emphasizes the necessity of removing foreign bodies promptly from within the globe. Most surgeons feel, as he does, that an eye with a retained foreign body is always a dangerous eye even though the foreign body may be retained for many years. We all agree with Dr. Stieren in not inserting small magnets into the vitreous. An exception to the immediate removal of foreign bodies should be made in those cases in which the foreign body is located in the lens, where it remains intact, as we know there is less reaction to a foreign body here than in any other part of the globe. Sufficient time should be allowed to permit the traumatic cataract to become thoroughly opaque and more solid, keeping the eye under observation as to tension and reaction, and then do an intracapsular extraction by the Knapp method, with the Arruga or Kalt-Arruga forceps, removing the lens intact with the foreign body in it. Glass in the anterior chamber sometimes can be removed if the operator wears high power magnification, as a Bausch and Lomb or Zeiss loupe, and with sharp illumination it is possible to grasp the glass fragment with a fine pair of needle point forceps through a limbal incision.

DR. EDWARD STIEREN, Pittsburgh. Regarding Dr. Sherman's proper criticism of prompt enucleation when the ciliary region has been involved, we assume a tremendous responsibility. There is no way of estimating which of these cases might be followed by sympathetic ophthalmia. All operators who have had this happen to them must regret their conservatism, for there is nothing that can be done to restore vision in either eye once the disease has developed. I am grateful to Dr. Veasey for his concurrence in this belief. Few of us have the valuable aid of a trained fluoroscopist, as Dr. Cross has, to direct the movements of our forceps in removing vitreous nonmagnetic foreign bodies, but even so there must be more or less disturbance of the vitreous as he directs the forceps to be moved up or down, right or left. The more the vitreous is traumatized, the less the probability of saving a useful eye. When I advocate prompt removal of a traumatic cataract I have in mind a lacerated anterior capsule with cortical matter in the anterior chamber.

**Mechanism of Gallstone Formation**—The formation of gallstones cannot be attributed to a single cause but must be referred to a number of pathologic conditions each of which may be due to one or more specific agents. Common observations indicate that one or more of three basic conditions always exist during the formation of biliary calculi, namely (1) stasis of the bile, (2) inflammation of the gallbladder or bile ducts and (3) abnormal metabolism involving the normal constituents of the bile. Of these conditions the first two contribute to the formation of gallstones either through an interference with the specific concentrating function of the gallbladder or through the production of a generally altered physical and chemical composition of the bile. The third condition, disordered metabolism is important, as best we know, because of the resulting formation and excretion of excessive amounts of certain constituents of the bile. Inflammation of the biliary system and bile stasis are almost inseparable conditions and it is therefore impossible to determine their relative importance. Abnormal metabolism usually occurs independent of the other two conditions and therefore must act alone. It should be emphasized that the metabolic disorder referred to is a general process affecting the body as a whole and not a condition referable to the biliary tract, the essential factor in this connection is therefore not the function or structure of the gallbladder and the ducts but the composition of the bile as it is excreted by the liver—Forbus, Wiley D. *Reaction to Injury*, Baltimore: Williams and Wilkins Company, 1943.

INFRA-RED THERAPY OF FLASH  
KERATOCONJUNCTIVITISDAVID G COGAN, MD  
V FAFRETT KINSEY PhD  
AND  
PHILIP DRINKER, CH E  
BOSTON

Recent increase in "flash" keratoconjunctivitis from exposure to welding arcs has revived interest in methods of treatment for this condition. One of the methods currently receiving considerable attention is the use of infra-red radiation. It is reported that the ocular condition produced by exposure to electric flashes "can be cured by direct exposure of the eyes to infra-red rays."<sup>1</sup> There does not appear to be any rationale for this form of treatment as the biologic effects of the ultraviolet rays which cause the keratoconjunctivitis are fundamentally different from those of the infra-red rays used in its treatment and there is no *a priori* reason that the one form of radiation would have a "neutralizing effect" on the other. Nevertheless, the importance of the subject at the present time and the wide attention which this form of treatment has received made it advisable to determine whether or not the aforementioned clinical report had an experimental corroboration.

To this end the following experimental procedures were used. After suitable radiation doses had been established, 10 rabbit eyes were exposed to an 85 watt mercury vapor arc with doses of ultraviolet radiation sufficiently above the threshold to cause a reproducible keratoconjunctivitis. After five hours, when the lesions first became apparent, alternate eyes were treated with a therapeutic heat lamp. The eyes were then examined and compared periodically until healed.

The mercury vapor lamp used in producing the lesions and the heat lamp used in its therapy were placed 15 cm from the eye. A hole had been drilled in the glass casing of the mercury lamp to permit the passage of ultraviolet rays less than 3,100 angstroms. Prior to each exposure the rabbit's eye was anesthetized by one instillation of 1 per cent pontocaine and during the exposure the eyelids were held open by a speculum. The heat lamp was found to deliver 0.75 Gm calory per square centimeter per minute at the distance used, as measured by a calibrated thermopile.

The pertinent data leading to the choice of suitable exposures and the results of treatment of experimental ultraviolet keratitis by infra-red radiation are collectively presented in the accompanying table. The ocular reaction is graded from 0 to +++ according to the following criteria: ±, questionable abnormality, +, minimal mottling of surface and dilatation of blood vessel, ++, mottling of the surface, dilatation of blood vessels, and abnormal staining of one half or less of the cornea by fluorescein, +++, pronounced mottling of surface and dilatation of blood vessels with staining of more than one half of cornea, +++++, same plus an opacity of the cornea. From part 1 of the table it is apparent that a three minute exposure to the mercury arc lamp under the conditions of the experiment provides a dose somewhat above the threshold, while from the latter portion of part 3 of the table it is apparent that the signs from this dose are reasonably

reproducible. Thus, twenty hours after the exposure all the eyes which had been exposed for three minutes showed moderate mottling of the corneal surface, best seen with an illuminated Placido disk,<sup>2</sup> a mild dilatation of the conjunctival and ciliary blood vessels and a take with fluorescein stain over some portions of the cornea. All corneas were healed in six days. The signs were similar in magnitude to those previously produced by exposing rabbit's eyes to welding arcs at a distance of 3½ feet for sixty seconds.<sup>3</sup>

Part 2 of the table indicates the ocular reaction with application of the heat lamp for various times. It is obvious that exposures of fifteen minutes or more under the conditions of the experiment consistently produce corneal lesions that are manifest in twenty hours. Exposure of five minutes, however, produced no visible

*Results of Exposure to Mercury Vapor Arc and to Heat Lamp*

	Time of Exposure to Mercury Vapor Arc Minutes	Time of Exposure to Heat Lamp Minutes*	Reaction in 20 Hours
1 Effect of exposure to mercury vapor arc	1		0
	2		+
	3		++
	5½		+++
	8½		+++
	9		+++
2 Effect of exposure to heat lamp		0	0
		5	0
		15	++++
		10	++
		15	++++
		40	++++
3 Treatment of flash kerato- conjunctivitis by heat lamp Treated	3	5	++
	3	5	++
	3	5	+
	3	5	+++
	3	0	++
Control	3		++
	3		++
	3		+
	3		++
	3		++

damage. This latter time was therefore selected as providing an appropriate exposure for the experiments on infra-red therapy.

Part 3 of the table indicates the results of exposing 10 eyes for three minutes to the mercury arc with and without treatment by the heat lamp. No significant difference between the treated and untreated groups was found.

## SUMMARY AND CONCLUSION

Keratoconjunctivitis was produced in rabbits by exposure to a mercury vapor arc. After the establishment of doses that would result in reproducible signs alternate eyes were treated by means of a therapeutic heat lamp. No evidence was obtained to indicate that this form of treatment benefited the keratoconjunctivitis.

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From the Howe Laboratory of Ophthalmology, Harvard Medical School and the U. S. Maritime Commission.  
\* Whitehead, W. M. and Blanton, W. P. Electric Ophthalmia Eye, Ear, Nose and Throat Monthly 22: 178-179 (May) 1943.

2 Cogan, D. G. Self Luminous Placido Disk. Am J Ophth 23: 914-915 (Aug) 1940.  
3 Kinsey, V. E., Cogan, D. G. and Drinker, Philip. Measuring Eye Flash from Arc Welding. J A M A 123: 403 (Oct 16) 1943.

## VALVULAR HEART DISEASE

PREVIOUSLY UNRECOGNIZED IN MILITARY  
MEDICAL EXAMINATIONS

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The cardiovascular sections of the Medical Processing Unit and of the Station Hospital of the San Antonio Aviation Cadet Center, San Antonio, Texas, examined during a number of months approximately 45,000 men who were taking the Army 64 examination for flying. These examinees, between the ages of 18 and 27 years inclusive, were for the most part candidates for aircrew training. All of them had been subjected to at least one screening examination. In spite of this 100 of them were found to have rheumatic valvular heart disease. Some had been examined routinely as many as twelve times in the course of their military service. Only 11 of this group knew of the presence of a heart murmur while in civilian life.

## METHOD OF EXAMINATION

After experimenting with several methods, we found the following procedure to be the best suited to the careful examination of large numbers of men in a short time.

The medical history of the candidate was obtained, and his pulse rate, blood pressure and Schneider index were recorded prior to his entrance into the heart station. He was then interrogated regarding rheumatism, rheumatic fever, growing pains, joint pains, arthritis, St Vitus dance, scarlet fever, diphtheria, heart murmurs or heart disease. Following a brief general inspection he was instructed to exhale deeply and to lean forward about 20 degrees. Auscultation was then performed with the diaphragm type (Bowles) stethoscope with particular attention to the aortic area and to the left sternal border. The examiner listened long enough to assure himself of the presence or the absence of significant murmurs. The examinee then exerted himself by briskly executing eight or ten deep knee bending exercises and was immediately examined in the left lateral recumbent position with special attention to the mitral area. The bell type of stethoscope proved to be most effective for this part of the examination. The candidate was first examined by a student officer from the School of Aviation Medicine and then by the staff cardiologist. The average time of each examination was two minutes.

Every examinee with a history of rheumatic disease, heart murmur or heart disease was examined by means of the fluoroscope, studied electrocardiographically and reexamined clinically.

Routine x-ray examinations were made of the chests of all candidates to rule out pulmonary disease. If the heart shadow appeared abnormal on the film, the candidate was recalled for further clinical examination and fluoroscopic study.

Each candidate with a questionable or a definite organic murmur was further studied fluoroscopically, electrocardiographically and often with the use of the teleoroentgenograph. Each was then reexamined clinically at greater leisure. A pulmonic systolic murmur was not considered evidence of valvular disease unless very loud or accompanied by a thrill.

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Any cardiac murmur occurring during diastole was considered evidence of organic valvular disease.

Finally, all candidates with questionable, as well as definite valvular heart disease were sent to the Station Hospital for close observation, complete evaluation and final disposition. Many of these were subsequently transferred to the School of Aviation Medicine at Randolph Field, where they were independently studied and used as teaching material. Every diagnosis was corroborated by the four of us and in many instances by other observers. Each examinee was under close observation for a period of not less than three weeks from the time his medical examination was begun at the Medical Processing Unit until his case was reviewed by the disposition board at the Station Hospital. This study and observation permitted the exclusion of transient murmurs and bruits of extracardiac origin.

Such a plan of study as this is indicated because a carefully considered decision must be made within a relatively short time, without the benefit of examination for progress over a period of several months.

## VALVULAR DISEASE ENCOUNTERED

Table 1 shows the types of valvular involvement encountered and their distribution among these 100 men.

The figures in table 1 are not in agreement with those usually quoted as representative of the total population with rheumatic heart disease.<sup>1</sup> The mitral valve was involved in 57 per cent in our series compared with the usually reported 95 per cent.<sup>2</sup> The aortic valve alone was involved in 43 per cent of our series, in contrast with the 5 per cent usually seen.<sup>2</sup> Moreover, the number of patients with involvement of more than one valve in the present series is small in comparison with the numbers in other series. This probably pictures the minimal nature of the lesions encountered in this selected group. The preponderance of aortic insufficiency in proportion to its reported occurrence in other series of rheumatic valvular heart disease would indicate that this is the lesion which is most frequently overlooked.

## HISTORY

A history of rheumatic fever or of chorea was obtained from only 30 of the 100 men with valvular disease, a history of growing pains and frequent unexplained epistaxis, from each of 2, and a history of scarlet fever with cardiac damage occurring at the same time, from 1. In all, 35 patients on careful questioning admitted some manifestation of rheumatism. Often the history was concealed at first by the applicant and was elicited only after the candidate knew that he had been eliminated from military training because of the clinical findings and that there was no advantage in further concealment. Usually a history of some manifestation of rheumatic fever can be obtained from over 70 per cent of patients with rheumatic heart disease.<sup>3</sup> While it is well known that bouts of rheumatism are often forgotten, the small number of histories obtained would tend to show that the rheumatic infection was mild or atypical and hence unrecognized or more easily forgotten. Multiple attacks of rheumatic fever had occurred in only 2 men. Two others had experienced both chorea and rheumatic fever. Only 3 patients had had chorea, confirming the fact that this is an uncommon disease in males.

1 Lewis Thomas *Diseases of the Heart*, ed 2, New York Macmillan Company, 1937, p. 203.  
2 White, Paul D. *Heart Disease*, ed 2 New York Macmillan Company, 1937, p. 238.  
3 White *Heart Disease* p. 232.



## CARDIAC HYPERTROPHY

All candidates with rheumatic histories and questionable or definite murmurs were examined fluoroscopically. Many of them also had teleroentgenograms from which the Ungerleider index was computed. By

TABLE 1—Valvular Involvement

Aortic valvular disease alone	43
Aortic insufficiency alone	30
Aortic stenosis alone	0
Aortic stenosis and insufficiency	4
Mitral valvular disease alone	48
Mitral stenosis alone	4
Mitral insufficiency alone	10
Mitral stenosis and insufficiency	34
Combined aortic and mitral valvular disease	9
Aortic insufficiency with mitral stenosis and insufficiency	6
Aortic insufficiency and stenosis with mitral stenosis and insufficiency	1
Aortic insufficiency and mitral insufficiency	3
Tricuspid or pulmonic valvular heart disease	0
Total	100

these examinations the degree of cardiac hypertrophy was estimated.

The incidence of cardiac hypertrophy in this series of patients with valvular disease is shown in table 2.

In only 2 instances did the Ungerleider index exceed plus 20 per cent. Cardiofluoroscopy yielded more helpful information than did evaluation of the heart size by the use of the Ungerleider index for the following reasons: 1. Fluoroscopy often showed enlargement of individual chambers of the heart when the Ungerleider index was within normal limits. This was particularly true as to men with mitral stenosis. 2. The Ungerleider index was often larger than plus 10 per cent when no other evidence of heart disease could be found. This was especially true as to men with slight deformities of the thoracic wall and as to those of strikingly sthenic build.

It is of interest that there were 8 examinees with aortic insufficiency without cardiac hypertrophy whose last known attack of rheumatic fever occurred eight, ten, twelve, twelve, fourteen, fifteen, sixteen and sixteen years prior to this examination. Since it may be assumed that the valvulitis occurred at or before that time, it would follow that minimal degrees of aortic insufficiency may be borne for a number of years without cardiac hypertrophy. Indeed it would seem that as no peripheral signs of aortic insufficiency were present in this group there are a number of persons with minimal aortic valvular lesions which are either stabilized or very slowly progressive in the absence of repeated rheumatic infection. Follow-up examinations of these persons over a long period would be of great interest and importance.

## ELECTROCARDIOGRAPHIC FINDINGS

The electrocardiograph proved to be the least valuable diagnostic instrument used in the study of these candidates. Although electrocardiograms were routinely made on every man who gave a history of rheumatism, even in the absence of physical signs of heart disease, no abnormalities were encountered. As a case finding method its value is negligible. In the 100 cases of

valvular heart disease with physical signs only 10 abnormal tracings were encountered, and these were found only in cases of involvement of the mitral valve. First degree auriculoventricular block was encountered five times, bundle branch block once and tall, notched P waves four times.

## AUSCULTATORY FINDINGS

In the final analysis accurate auscultation proved to be the only reliable means of discovering valvular heart disease in this group. The aortic diastolic murmurs were for the most part of high pitch, of low intensity and of long duration, often heard only in the third and fourth interspaces along the left sternal border. In these cases of mitral stenosis the middiastolic rumble was not commonly encountered. The characteristic murmur was the rough presystolic crescendo ending in a loud sharp first tone. Often it was elicited only after considerable exercise on the part of the subject. The importance of listening carefully for this murmur in the presence of a loud first tone at the apex cannot be overestimated. Auscultation over a wide area is necessary for the murmur is sometimes localized over a space no larger than a quarter (24 mm). Differentiation of the presystolic murmur from the split or impure first sound heard at the cardiac apex in a thin chested person with an overactive heart is often a problem. One should recognize the type of person in whom the latter is usually found. The other important things are (1) the duration of the murmur (the presystolic is always longer), (2) the crescendo sound of the presystolic murmur (in the impure first tone the loudest part may be heard first), (3) the fact that every presystolic murmur can be heard in its classic form at some time and that often repeated examinations are necessary, (4) the fact that the characteristic loud,

TABLE 2—Cardiac Hypertrophy

Type of Disease	Enlarged Heart	Normal-Sized Heart
Aortic insufficiency alone	10	29
Aortic insufficiency and stenosis	3	1
Mitral insufficiency alone	0	10*
Mitral stenosis alone	0	4†
Aortic insufficiency and mitral stenosis and insufficiency	4	2‡
Mitral stenosis and insufficiency	11	23
Aortic insufficiency and mitral insufficiency	0	3‡
Total	28	72

\* In 3 patients the Ungerleider index was plus 15, 13 and 10. The fluoroscopic findings were normal.

† In 2 patients the Ungerleider index was plus 15 and 10 but fluoroscopy gave normal results.

‡ In 1 patient the Ungerleider index was plus 10. The fluoroscopic findings were normal.

§ In 1 patient the Ungerleider index was plus 12. The fluoroscopic findings were normal.

sharp snapping first tone always follows a presystolic murmur. An accentuated or reduplicated pulmonic second tone should always be an indication for careful reexamination of the mitral area.

The most difficult problem was the evaluation of the systolic murmur. We attempted to grade these murmurs according to the classification of Levine.<sup>4</sup> Since

it is impossible for us to follow our examinees over a long period of time, the diagnosis of organic mitral insufficiency was made on the basis of auscultatory signs alone only when the murmur was of grade 3 intensity or louder. With the grade 2 systolic murmur either a definite history of rheumatic infection or some other sign of heart disease had to be present before the diagnosis of organic valvular disease was made. The fact that in many instances a murmur heard at the apex is transmitted from a loud pulmonary systolic murmur soon became evident to us. In these instances the murmur heard at the apex has the same quality and pitch as that identified at the pulmonic area. It can be traced from the point of origin to the cardiac apex, is heard only during complete expiration and usually disappears when a small amount of air has been taken into the chest. A number of men with this type of murmur were studied fluoroscopically and electrocardiographically, and no evidence of heart disease could be found.

#### OTHER SIGNS AND SYMPTOMS OF HEART DISEASE

Other signs of heart disease were infrequent in this group. Sometimes the apex impulse could be found displaced to the left. Occasionally the typical mitral facies was encountered. Cardiac thrills were distinctly uncommon, although looked for in all patients. None of the signs of congestive failure were present in the entire group. Clubbed fingers proved in every instance to be a misleading sign. At least 10 examples of this interesting abnormality were encountered. Complete studies in these cases failed to reveal evidence of cardiac or pulmonary disease and led to the conclusion that the condition probably was of congenital origin.

The absence of peripheral signs in most of our cases of aortic insufficiency was striking. A capillary pulse was found only three times, and the other classic peripheral signs of aortic insufficiency were absent. The highest systolic blood pressure encountered in this group was 178 mm of mercury, and the lowest diastolic pressure was 55 mm of mercury.

Symptoms of heart disease were conspicuous by their absence. One man alone in the entire group with valvular disease complained of symptoms referable to the heart, and these symptoms were easy fatigability and palpitation on exertion and at rest. He was judged also to have neurocirculatory asthenia. The absence of symptoms in the other 99 men in the group was striking and in sharp contrast with the plethora of symptoms encountered in the group with neurocirculatory asthenia. The fact that practically all were active in sports is not surprising. The literature contains numerous references to athletic feats performed by persons with valvular heart disease.<sup>5</sup>

#### COMMENT

The presence of a sizable number of men with unrecognized minimal heart disease in a group which had previously been subjected to fairly careful examination seems to us to be an important observation. Cole<sup>6</sup> reported the incidence of heart disease in college stu-

dents, who at least partially resemble this group, as 15 per thousand. He gave no figures as to the percentage in whom heart disease was previously unrecognized. Judging from the occurrence of 2 per thousand in one group there must be a large number of young people with unrecognized minimal valvular disease in the general population. The importance of early recognition of this group from the military point of view is obvious. Despite their good cardiac reserve and absence of symptoms they are under a handicap when forced to extreme physical exertion. They are susceptible to recurrent bouts of rheumatic fever which may make them cardiac cripples prematurely. The danger of subacute bacterial endocarditis always threatens. There is always the possibility that they may become a government charge when and if some one discovers later in their military career that they have heart disease.

The group is also important from the industrial, insurance and public health points of view. The fact that large numbers of physicians do not recognize that such lesions exist is evident. Many physicians are accustomed to think of aortic insufficiency as occurring only in the presence of great enlargement of the heart, a loud diastolic murmur, low diastolic blood pressure and classic peripheral signs. That mitral stenosis occurs in the absence of dyspnea on exertion, a loud, easily audible murmur and a large left auricle is often not appreciated. True enough the unrecognized patients do not consult the doctor because of symptoms of heart disease, but they do go to physicians for other reasons. Careful and attentive auscultation even in the absence of a history of rheumatism will yield fruitful results in the discovery of minimal valvular heart disease.

Once the diagnosis is made, the management must be skilful. It is unfair to make these young men heart conscious. They must be tactfully guided into occupations in which their livelihood is not dependent on their physical endurance. They should be guarded from undue exposure to the weather, and they should not engage in strenuous competitive sports. At the same time the physician must not alarm them unduly. It is all too easy to make cardiac invalids out of them. They should be carefully followed in order that further knowledge may be gained as to the prognosis and ultimate outcome of these minimal lesions.

#### SUMMARY AND CONCLUSIONS

In the examination of a large number of men aged 18 to 27 inclusive, approximately 2 per thousand were found to have hitherto unrecognized valvular heart disease despite the fact that they had all been subjected to two or more physical examinations. The condition most frequently unrecognized was aortic insufficiency. In almost every case the valvular disease was minimal and was associated with minimal cardiac hypertrophy or none.

The fact that only 35 per cent gave a history of any manifestation of rheumatism is in contrast with the fact that in most series the usual figure is 70 per cent or over. Careful auscultation is the only reliable means of detecting this type of heart disease.

The discovery of such unrecognized heart disease is important from both military and civilian standpoints, hence there should be more careful cardiac examinations.

5 Jokl, Ernst, and Suzman, M. M. Aortic Regurgitation and Mitral Stenosis in Marathon Runner, with Special Reference to Effects of Valvular Heart Disease on Physical Efficiency, *J A M A* 114: 467 (Feb. 10) 1940.  
6 Cole, Llewellyn R. Cardiac Disease Among 29,189 Newly Entering Students at the University of Wisconsin, *Am J M Sc* 201: 197 (Feb.) 1941.

## GRAIN ITCH

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In spite of the fact that *Pediculoides ventricosus* is an apparently widespread inhabitant of the United States, a review of the literature reveals but little concerning this obnoxious mite. In fact aside from a report<sup>1</sup> of several cases in 1933 and a report on harvest itch in Europe<sup>2</sup> and Grove's<sup>3</sup> study on hypersensitivity to *P. ventricosus* it was necessary to go back to 1909-1910, when original investigation was done to find case reports in American medical literature. Therefore most accounts including treatment and prophylaxis found in the modern textbook are taken from these original articles.

The disease seems to be fairly common in certain farming districts of the United States, but since it responds rapidly to simple remedies it would appear that many cases are never diagnosed, the cause being attributed to some form of allergy or to mosquito or other insect bites. The epidemic reported in this paper was originally attributed to allergy, and considerable work was done along these lines before the causal agent was discovered.

## SYNONYMS

Among the terms used in describing this condition are grain itch, acarodermatitis urticarioides, barley itch, grain mite dermatitis, straw itch, mattress itch and hay itch.

## SYMPTOMS

The onset of symptoms after exposure varies from twenty minutes<sup>4</sup> to twenty-four hours,<sup>5</sup> Schamberg<sup>6</sup> records sixteen hours as the normal time.

It is thought that *Pediculoides* in the process of abstracting liquid substance from the skin synchronously injects an irritating substance which gives rise to an urticarial type of lesion. These lesions, which may be situated anywhere on the body, are extremely itchy, are pale pink to bright red and vary in size from pin-head to 2 or more inches in diameter. Many lesions are surmounted by a tiny vesicle but no puncture wound is visible. Secondary infection is common as a result of scratching, and pyoderma and impetiginous lesions may occur resulting in enlargement of the neighboring lymph nodes.

Goldberger and Schamberg<sup>7</sup> report a moderate leukocytosis and eosinophilia with occasional albuminuria occurring in many cases which they studied.

Slight malaise is present only when the lesions are very extensive or when decided secondary infection occurs, and persons who have been in frequent contact with the mites, such as farmers, frequently have few or no symptoms, having apparently become desensitized to the obnoxious material.

## ETIOLOGY

The disorder is produced by a mite first discovered by Mr. George Newport of England in 1849 and known as *Pediculus ventricosus*. In 1872 Sante reported an epidemic "in which a microscopic insect analogous to the acarus of scabies caused an itch."<sup>8</sup> Prior to this time outbreaks of an itching eruption in people sleeping on straw mattresses were observed in Massachusetts in 1829, 1831 and 1845. In France in 1849 similar eruptions were noticed in laborers who handled the straw of wheat and barley. These epidemics were probably due to *Pediculoides*, and while this mite was first identified entomologically in the United States by Webster<sup>9</sup> in 1882 it was not until May 14, 1909 that Dr. Lyman T. Rawles<sup>10</sup> proved conclusively that *Pediculoides ventricosus* was the cause of grain itch. Almost simultaneously Schamberg and Goldberger,<sup>7</sup> reporting on an epidemic of the eruption occurring in and around Philadelphia, demonstrated conclusively the causation of the eruption.

It is interesting to note that in 1902 the mite (which is a parasite of the boll weevil) was brought from Mexico to Texas by Hunter<sup>8</sup> for the purpose of destroying the boll weevil. This experiment was not a success, as the mite was destroyed by a small ant which acted as a natural check.

In 1923 Ancona<sup>11</sup> reported a peculiar form of asthma occurring among workers in grain mills in Florence, Italy, which he attributed to the inhalation of the mite or to its action on the nasal mucosa. In 1925 Storm van Leeuwen<sup>12</sup> regarded this condition as being due to the action of the mite in biting the skin, providing the sensitization necessary for the asthmatic symptoms to result from subsequent contact or inhalation.

The female, which is the larger, measures 0.2 mm in length, and under favorable conditions only six days elapse from the time the young female emerges from the mother before they reproduce a brood of their own. The brood varies in number from a few dozen to over 200. *Pediculoides* lives as an ectoparasite on various insects especially in their larval stages. Probably the most common of these is the grain moth (the adult of which is a small gray moth not unlike a cloth moth and its larvae feed on the grain of cereals) and the abundance of the mites varies in direct proportion to the number of insects present.

At winter temperatures but little development takes place, the mites appearing over winter as gravid females.

The microscopic examination of the cutaneous lesion as described by Schamberg<sup>6</sup> demonstrates the fact that the mite does not burrow into the skin as does the acarus of scabies and that the pathologic changes in the skin are characteristic of urticaria. There is a circumscribed elevation of the epidermis with thinning of the horny layers and absence of the stratum granulosum with the rete cells showing some alteration. The papillary zone is infiltrated with round cells, polymorphonuclear leukocytes and mast cells. There is considerable dilatation of the blood vessels and lymph spaces. No trace of a puncture can be discerned.

From the Lois Grunow Memorial Clinic.  
1. Kittredge H. E. Grain Itch. Report of 2 Cases Occurring in Small Epidemic. *Virginia M. Monthly* 60: 357-360 (Sept.) 1933.  
2. von Mallinckrodt Haupt A. Harvest Itch in Europe, Urol & Cutan. Rev. 3:4: 744-748 (Nov.) 1930.  
3. Grove E. F. Studies in Specific Hypersensitiveness. Asthma and Dermatitis Due to Hypersensitiveness to *Pediculoides Ventricosus*. *J. Immunol.* 12: 263-271 (Oct.) 1926.  
4. Swan D. C. Dermatitis Caused by Mite (*Pediculoides Ventricosus*) and Its Occurrence in Australia. *M. J. Australia* 2: 573-578 (Nov. 3) 1934.  
5. Sutton R. L. and Sutton R. L., Jr. Diseases of the Skin ed. 10. St. Louis C. V. Mosby Company 1939 pp 1345-1348.  
6. Schamberg J. F. Grain Itch (Acarodermatitis Urticarioides). A Study of a New Disease in This Country. *J. Cutan. Dis.* 28: 67 (Feb.) 1910.  
7. Goldberger, Joseph and Schamberg J. F. Epidemic of an Urticarioid Dermatitis Due to a Small Mite (*Pediculoides Ventricosus*) in the Straw of Mattresses. *Pub. Health Rep.* 24: 973-975 (July 9) 1909.

8. Quoted in Schamberg.  
9. Webster F. V. and Reeves G. I. Wheat Straw Worm Circular 106 U. S. Dept. of Agriculture, 1909.  
10. Rawles, L. T. Straw Itch. *Indiana M. J.* 2: 337 1909. *Dermatitis Pediculoides Ventricosus*. Synonym Grain Itch. *ibid.* 3: 351-354 1910.  
11. Ancona G. Asma epidemica da pediculoides ventricosus. *Policlinico* (medical section) 30: 45-70 (Feb.) 1923.  
12. Storm van Leeuwen W. Allergic Diseases. Philadelphia J. B. Lippincott Company 1925 p. 24.

## DIFFERENTIAL DIAGNOSIS

The disease must be differentiated from urticaria, scabies, pediculosis, chickenpox and erythema multiforme. A history of previous contact with straw, the occurrence of the eruption in families or groups of laborers and the urticarial type of reaction surmounted by the vesicle are positive aids in the diagnosis of grain itch.

In urticaria the lesions are evanescent in character, different stages of the lesions are seen and the eruption is frequently preceded by constitutional symptoms.

Scabies with its characteristic distribution is positively identified with the findings of the acarus by microscopic examination.

The lesions of *Pediculosis corporis* are usually limited to the trunk, and the hemorrhagic puncta found on the scapular region and around the waist are characteristic. By searching the seams of the undergarments the pediculi are usually found.

Chickenpox is seen more commonly in children. The eruption appears in successive crops and usually develops without apparent preceding erythema.

Absence of the history of external injury aids in the diagnosis of erythema multiforme, which is characterized by purplish red macules, papules or nodules, is symmetrical in its distribution and often assumes characteristic shapes. The absence of itching and the appearance of new lesions when the patient is removed from his work are of diagnostic value.

Some cases of dermatitis medicamentosa may resemble grain itch, so a history of taking drugs is most important.

## TREATMENT

While *Pediculoides* cannot thrive on human blood, nevertheless, when its normal food supply is cut off it will feed on any flesh, hence it remains attached to the human skin for only a short time and so treatment with the view of destroying the mite is useless. Thus remedies for relieving the subjective symptoms are all that are necessary. This may be accomplished by the use of warm demulcent baths such as oatmeal, or liniment starch and mild antipruritic lotions as phenol 15 minims (1 cc), zinc oxide 1 ounce (30 Gm), glycerin 1 drachm (4 cc), lime water 4 drachms (15 cc) and rose water to 4 ounces (120 cc).

Concern should be given to the prevention of the disease, and with this end in view cooperation of the farmer and state entomologist is necessary. Burning the grain stubble during the fall or spring has been suggested,<sup>13</sup> the control of the insect on which the mite feeds being essential.

Cory<sup>14</sup> states that the mite can be got rid of by dusting the buildings, granaries and other material that comes in contact with grain and straw with powdered sulfur.

## REPORT OF CASES

In the fall of 1941 it was found that men handling bales of hay at the Tovrea Packing Company, Phoenix, Ariz., were breaking out in a cutaneous eruption anywhere from eight to twenty-four hours after being in contact with the hay, which had been brought in from different parts of the state. A form of allergy was suspected and samples of the hay were sent to the Department of Bacteriology of the University of Ari-

zona in Tucson, where allergens were made. These were sent to the packing company with instructions to have the men tested for sensitivity. For some reason this was not done, and since the supply of hay was almost exhausted no further action was taken.

In November 1942 a case of cutaneous eruption was referred to me from this company. The patient was a laborer aged 50 whose job was to open bales of hay and to load it into trucks prior to the hay being ground up for feed. He presented a generalized urticarial type of eruption which was extremely itchy and which had developed a day after he began working on the hay pile. The individual lesions were discrete and papular, with many showing the characteristic wheal formation of urticaria. They differed from urticaria, however, in that those which were not excoriated were surmounted by a tiny central vesicle varying from pin-point to pinhead size and filled with a clear fluid. Secondary infection was present in numerous areas, especially about his groins and axillae, where pyoderma-like lesions had developed. No examination for parasites was made. Liniment starch baths and the aforementioned antipruritic lotion were prescribed, applications of which gave rapid relief, the patient finding it not necessary to return for further investigation.

In February 1943 a call was received from the manager of the same company with the information that a fresh outbreak of the eruption had occurred and that the men refused to work on the hay which had been received the previous fall. Several men were examined, all of whom presented a similar picture to the case seen in November.

Insect bites were suspected and samples of hay were collected from both the outside and the inside of the bales, and at this time it was noticed that there were many grain moths and other insects infesting the stacked up hay. An interesting fact was that the foreman who had worked on the job for years was the one man who did not complain of any irritation in spite of the fact that he was in constant contact with the hay.

Microscopic examination of the samples of hay and straw revealed the cause of the epidemic, *Pediculoides ventricosus*, which was found to be present in considerable numbers in all specimens collected. Most of the men responded to the same treatment as already mentioned, while a few received considerable relief from itching by rubbing themselves with alcohol.

Preventive measures were then tried in an effort to get the men back to work. Greasing of the body followed by change of clothing, as suggested by Goldberger<sup>7</sup> and by Chandler<sup>15</sup> was ineffective and troublesome, as was the method of dipping the underclothing in a mixture of sulfur, naphtha soap and alcohol and allowing it to dry before wearing. However, the full cooperation of the men using these methods was difficult.

Sublimed sulfur dusted on the skin and underclothing as suggested by Riley and Johannsen<sup>16</sup> was tried and proved effective for several days, when the men again began to break out. About this time the supply of hay ran out and no further trouble has been reported. It was learned afterward that five of the men on their own initiative sprayed themselves with Shell Oil Fly spray and claimed immunity from the bites of the mite. This product of the Shell Oil Company, Inc., consists of a pyrethrum extract (the irritating properties having

<sup>13</sup> Chandler, A. C. *Animal Parasites and Human Disease*. New York, John Wiley & Sons, 1918, pp. 337-339.  
<sup>14</sup> Cory, E. N. *Grain Itch Mite or the Louse Mite (Pediculoides ventricosus)*, University of Maryland and U. S. Department of Agriculture, Cooperating Extension Service, Release of August 1942.

<sup>15</sup> Riley and Johannsen quoted in Chandler<sup>13</sup>.

been removed) and an odorless highly refined kerosene. Since kerosene is irritating to the skin this method is not to be recommended.

#### CONCLUSION

Apparently the diagnosis of grain itch is frequently missed, owing to the ease with which the symptoms subside after removal of the patient from the infected material.

Preventive measures consist in enlisting the aid of both the farmer and the state entomologist.

### RECURRENT DISLOCATION OF THE SHOULDER

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When one finds described in the literature many operations for the correction of a mechanical fault it is a fair assumption that none of them are entirely satisfactory in establishing permanent cure. Certainly recurrent dislocation of the shoulder is not an infrequent condition, but its cause has certainly never been established satisfactorily.

Analyzing the condition from the anatomic standpoint, it seems to us that the glenoid has little or no function in maintaining the head of the humerus in position. It is almost flat and should be smooth, if it is not smooth, the patient's use of the shoulder is so hampered that recurrent dislocation could not take place. The capsule of the joint is a weak and loose bag which is attached well above and well below the actual articular surface and has little part in holding the head of the humerus in contact with the surface of the glenoid. In circumflex paralysis the head of the humerus will drop away from the scapular attachments a full inch, and the weight of the arm will continually stretch the capsule until the head of the humerus lies practically under the glenoid.

If these two anatomic structures do not support the head of the humerus, how are we to assume that it is maintained in its position against the articular surface of the glenoid? It is quite apparent that the muscles of the shoulder and arm originating at the shoulder girdle and inserting in the humerus or below are responsible for maintaining this position. It has been fairly well established through the experience of many men that the head of the humerus is dislocated primarily when the arm is abducted to 60 to 90 degrees, extended back of the lateral midplane of the body and internally rotated, with the force applied to impel the head of the humerus downward and forward. In this position the great adductors of the humerus attached to the upper third of the shaft anteriorly are pulled tight. The pectoral muscle of this group attached to the anterior lip of the bicipital groove and very close to the head of the humerus pulls the head downward and forward, and this is a powerful muscle. The latissimus dorsi and teres major pull downward more than forward, especially with the arm in internal rotation. What is there to oppose these muscles and keep the head of the humerus from dislocating downward and forward? When the arm is in the abducted extended position especially in internal rotation the head of the humerus is thrown forward against the anterior part of the capsule. It is held backward by the external rotators and adductors, namely, the supraspinatus, infraspinatus

and teres minor, which come together laterally and somewhat forward to attach to the greater tuberosity, not passing through or forming part of the capsule of the joint. On the other hand, the subscapularis comes beneath the head of the humerus and winds around anteriorly to attach to the lesser tuberosity over the anterior surface of the head of the humerus (fig. 1). This is an internal rotator, and with the arm in abduction and extension and internal rotation this muscle is relaxed. Normally the subscapularis attachment blends with the anterior part of the capsule of the joint and forms a broad heavy ligamentous support around the upper end of the head of the humerus. When this support is pulled tight it is adequate to hold the head of the humerus against the pull of the pectoral and adductor muscles if it is broad and strong. If however, it is narrow or weak, when the arm is in the abducted extended position the attachment of the muscle has a tendency to slip up between the head of the humerus and the glenoid, or between the head of the humerus and the coracoid (fig. 2).

The supraspinatus, infraspinatus and teres minor, of course, do exert some effect in holding the head of the humerus back in the glenoid. It is not infrequent to

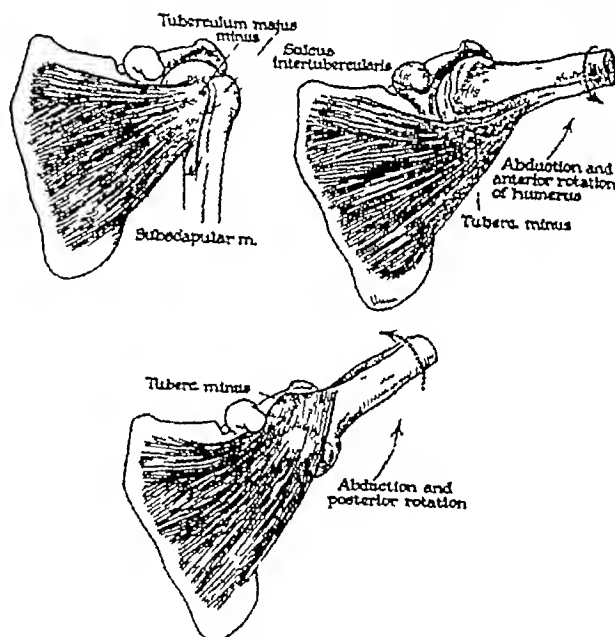


Fig. 1—Attachment of subscapularis to lesser tuberosity of humerus.

see the attachment of these muscles pulled off with a shell of the greater tuberosity in a forcible dislocation of the head of the humerus downward and forward. Unless these muscles are attached at their proper site external rotation cannot be maintained and therefore the subscapularis cannot support the head of the humerus normally but permits internal rotation, which relieves the tension on the part of the capsule supported normally by the subscapularis.

All these muscles working in harmony as a group would seem to be the main support of the head of the bone in resisting the pull of the pectoralis major and the other adductors as well as the force of any blow or torsion which might dislocate the head of the humerus. This being true, it follows that these muscles must be properly attached and must work in harmony in order to maintain the head of the humerus in its normal position under circumstances of stress when the arm is in the abducted extended position.



The Nicola operation<sup>1</sup> contemplates overcoming the tendency of the humeral head to displace; by inserting through it what is essentially a ligamentum teres. For this the long head of the biceps is used, and in many cases it serves to cure recurrent dislocation. In my

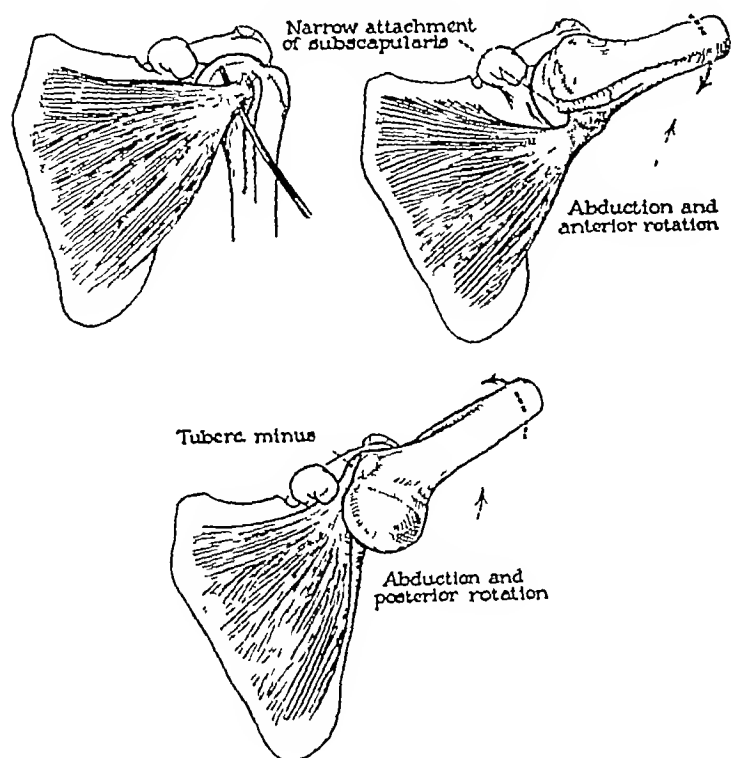


Fig. 2—Tendon slipping between head of humerus and coracoid when arm is placed in abduction and extension

experience, however, it does not meet the mechanical requirements in a man whose occupation necessitates frequent strong pull on the muscles of the shoulder. We have had about 20 per cent recurrences after this operation, all in individuals who were doing strenuous work or exercise. In 2 cases—four shoulders in twins—one recurred after a Nicola operation, whereas the other three shoulders are still intact and without displacement after five years. The recurring recurrent dislocation was caused by forcible hypertension with the arm in abduction, at the second operation it was found that the tendon was torn completely loose from its attachment in the head of the humerus. Kernwein<sup>3</sup> has made sections of the bone and contained tendon, and he finds only a few strips of fibrous tissue remaining in the tunnel of bone. The tendon does not keep its character as a tendon where it passes through bone. He has repeated this experiment on animals and finds that there remains only an attachment of tendon on the surface of the bone after a few months.

Bankart<sup>4</sup> believes that recurrent dislocation is due to the capsule being torn from the glenoid, which leaves a gap for the head to descend without resistance. Undoubtedly this is true in some cases but in the recurrent dislocations on which we have operated, amounting to 21, we have not found this condition, although the capsule has been opened anteriorly to permit inspection of the glenoid lip. Also with the capsule as loose as it normally is I cannot see that it adds very much support to the head of the humerus or

control of its tendency to displace downward and forward when strong pull is exerted by the pectoralis major and other adductor muscles.

McLaughlin<sup>5</sup> says "Operative findings on both acute single and chronic habitual lesions of this type have proved pretty definitely that soft part tears accompanying dislocations are many and varied, both as to location and extent. It is our present impression that the pathologic circumstances predisposing to habitual dislocation consist of certain combinations of the soft part lesions, but we are not yet sure just which combination does the trick. It appears reasonably certain that a longitudinal tear through the aponeurosis joining the supraspinatus and the subscapularis, occasionally involving the subscapularis itself, but in any case allowing the latter tendon to recede forward and downward away from the external rotators, constitutes one digit in the correct formula of soft part lesions leading to recurrent dislocation."

With this we are in full agreement, because it is only reasonable to conclude that any relaxation in the attachment or extension of the muscles from the scapula to the head of the humerus interferes with the strength and resistance of these muscles to the displacing effect of the pectoralis major and the hyperextending force on the humerus, which resists the forward displacement of the head as the elbow moves backward. If any of these circumstances exist, tightening of the grip of the subscapularis around the head of the humerus by moving its attachment to the greater tuberosity might correct all or any one of such tears or relaxations.

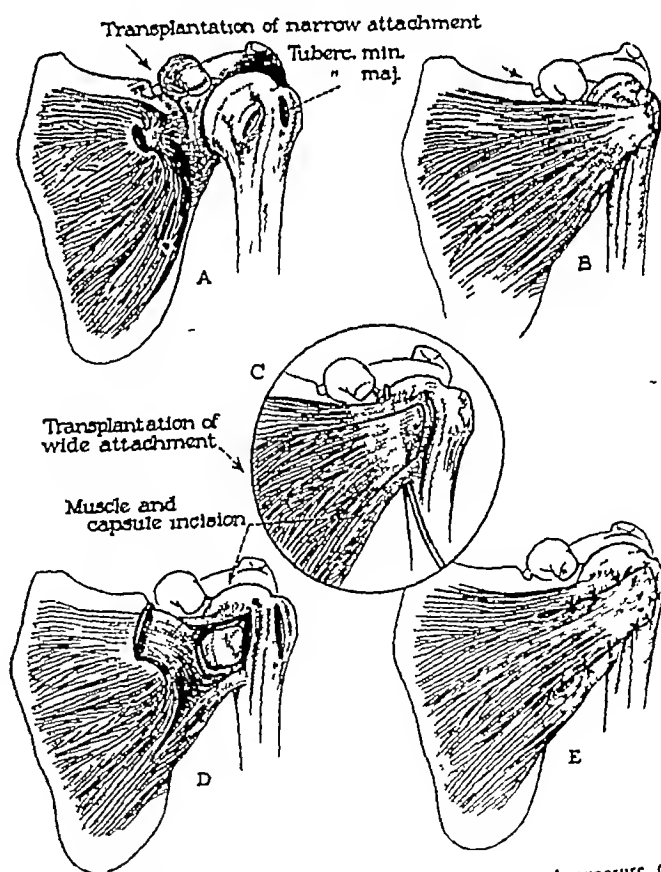


Fig. 3—Medial reflection of tendinous attachment and exposure of head of humerus

McLaughlin and we may be viewing the disability from opposite sides and arriving at the same conclusions. To our minds this explanation is much more reasonable from the anatomic pathologic standpoint than a weakening of the capsule. In all probability it is a

1 Nicola, Toufick. Recurrent Anterior Dislocation of the Shoulder, *J Bone & Joint Surg* 11 128 132 (Jan.) 1929.  
2 Stack, James K., and Magnuson, Paul B. The Nicola Operation. An Analysis of Failures, *Quart Bull Northwestern Univ M School* 14 108-113 (No 2) 1940.  
3 Kernwein, Graham. A Study of Tendon Implantation into Bone, *Surg, Gynec & Obst* 75 794 (Dec.) 1942.  
4 Bankart, A S Blundell. The Pathology and Treatment of the Recurrent Dislocation of the Shoulder, *Brit J Surg* 26 23 (July) 1938.

5 McLaughlin, Harrison I. Personal communication to the authors.

combination of improper support anteriorly by the tendons of the subscapularis and partial detachment of the supraspinatus and infraspinatus, which leaves a gap above the shoulder and weakens the support that normally resists the adductor muscles and the violence

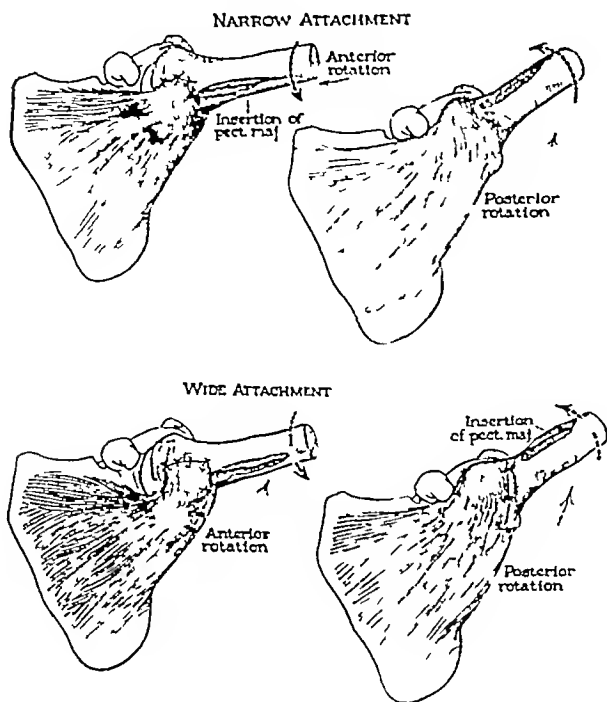


Fig 4—Method of attachment of muscle and tendon under head of humerus.

Recurrent dislocations occur in epileptic much more frequently than in any other class of patients. This would seem to indicate that muscle imbalance and non-synchronization between groups of muscles have definitely to do with recurrent dislocation. The group of 6 cases here reported with a new operation for the cure of recurrent dislocation of the shoulder includes 2 with epilepsy who had had many recurrences, 3 recurrent dislocations, all in men performing heavy work or violent exercise, and 1 patient on whom there had been no previous operation. Not enough time has elapsed to call the cures 100 per cent. The first operation was performed two years ago and the last six months ago. All the patients have normal shoulder function and none have had any recurrence to this date. Five year cures are much more impressive than one year cures, however, it does seem that the operation here described is much more simple, more easily performed and more logical than others so far devised, and it is therefore being reported, possibly prematurely, but with the hope that other surgeons will attempt it and report in the future.

#### OPERATION

An incision is made over the junction of the anterior and medial third of the deltoid, extending from the acromion downward. Muscle fibers are split and separated to expose the anterior surface of the capsule. The arm is rotated externally and the tendon of the subscapularis is picked up with a narrow smooth retractor. Observation is made of the width of this attachment and how far toward the origin of the subscapularis the blending of the tendon and capsule occurs. In one of our cases there was no blending whatever, the tendon

was entirely separate from the capsule up to its attachment and was so narrow that with the arm placed in abduction and extension the tendon could be seen to slip between the head of the humerus and the coracoid (fig 2). In this particular case there was no support from this muscle when the arm was in the extended abducted position.

If it is found that the tendon blends with the capsule, the tendon is pulled tight with the retractor and an incision is made following the upper and lower borders of the subscapularis muscle from the musculotendinous junction to its attachment along the anterior lip of the bicipital groove. A chisel is then driven in on the distal side of the attachment medial to the lip of the bicipital groove, so that this groove is not weakened or made shallow. The tendinous attachment, with a wedge shaped piece of bone, is lifted and the capsule and the tendinous attachment are reflected medially to expose the head of the humerus and the anterior edge of the glenoid (fig 3). Inspection can be made of the glenoid and the head of the bone through this opening, and it can be determined easily whether or not the capsule has been torn loose from the glenoid.

After inspection, the arm is brought into internal rotation and, with a suture through the attachment of the subscapularis tendon, the tendon is stretched across the bicipital groove to the greater tuberosity and held there while the arm is manipulated to see how much external rotation will be permitted by the subscapularis muscle. The attachment of this muscle should be moved over onto the greater tuberosity far enough really to tighten it up in 50 per cent external rotation, thus forming a roof for the long head of the biceps. When the new location for the subscapularis attachment is determined a sharp, thin bladed chisel is driven into the greater tuberosity, with the edge of the blade held parallel to the long axis of the bone. The chisel is moved back and forth laterally to spread the cancellous bone and leave a wedge shaped gutter, into which is forced the wedge shaped piece of bone attached to the

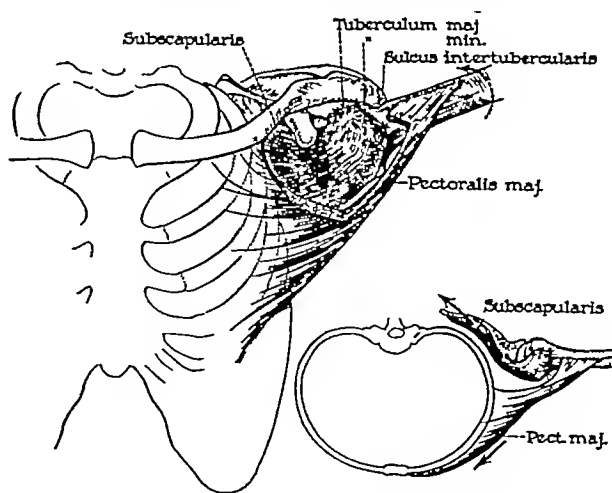


Fig 5—Tendon and muscle of subscapularis winds firmly around head of humerus.

subscapularis tendon. The tendon is sutured to the capsule with a doubled 00 chromic catgut suture and the sutures are repeated on both sides of the wedge so that the sides of the gutter are firmly in contact with the inserted bone. The lower border of the muscle and tendon are then tacked down by interrupted sutures

far enough under the head of the humerus so that the muscle and capsular tendon have a firm grip around the head, with no tendency to slip up toward the coracoid and glenoid when the arm is brought into abduction and external rotation (fig 4)

If the operation is properly performed there will be, at its conclusion, 25 to 50 per cent limitation of external rotation. The arm should be moved through internal and external rotation to see whether the mechanical requirements have been achieved and that the tendon and muscle of the subscapularis winds firmly around the head of the humerus in both positions (fig 5). If the details have been properly carried out the procedure forms a musculotendinous cup around the head of the humerus in both external and internal rotation, which resists the downward and forward displacing effect of the adductors of the humerus—a powerful group. In this group of cases the operation has served to maintain the head of the humerus in position under severe stress, when other forms of operation have failed.

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## CHANGES IN THE ELECTROCARDIOGRAM INDUCED BY ACUTE PANCREATITIS

A CLINICAL AND EXPERIMENTAL STUDY

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Acute pancreatitis frequently presents many bizarre symptoms and physical signs, so that its differential diagnosis from other acute conditions, especially acute coronary occlusion and perforated peptic ulcer, presents many difficulties. As most observers are in agreement concerning the conservative or nonoperative treatment of acute pancreatitis and the entirely dissimilar treatment of acute coronary disease, the importance of making a correct diagnosis is obvious.

We were impressed by a series of changes observed in the electrocardiographic patterns in a number of cases of acute pancreatitis, and this has led us to believe that a new aid in diagnosis might be made available. Our first experience with this phenomenon is presented in the following case report.

**CASE 1**—G. S., a man aged 38, admitted on May 30, 1938, gave a history of chills and fever starting four days before admission. Two days after the onset he began to have severe pain in the right upper quadrant of the abdomen, which radiated to the right loin and back. There was nausea but no vomiting. The pain became progressively worse, and an electrocardiogram taken before entering the hospital showed changes which were interpreted as indicative of acute coronary closure. On admission the patient's temperature was 102 F, the pulse rate 96 per minute, the respiratory rate 24 per minute. The heart was not enlarged, and the sounds were of good quality and regular. There were no murmurs. The blood pressure was 110 mm systolic and 54 mm diastolic. There was no abdominal distention, but pronounced tenderness in the right upper quadrant associated with muscle spasm and rebound tenderness was present. Laboratory examinations showed a white blood cell count of 17,500 per cubic millimeter with 85 per cent polymorphonuclear leukocytes. The urine was alkaline and negative

except for a faint trace of albumin. A scout film of the abdomen was negative. On May 30, 1938, an electrocardiogram showed notching of P<sub>2</sub> and P<sub>3</sub> and premature auricular contractions. Because of the persistence of the abdominal signs and the difficulty in excluding acute gallbladder disease, an exploratory celiotomy was decided on and performed on June 1. A small amount of free fluid was found, and there were fresh fibrinous adhesions between the gallbladder and the duodenum. The latter organ showed subserosal hemorrhages. The omentum was studded with areas of fat necrosis. A diagnosis of acute pancreatitis was made. The postoperative course was marked by progressive distention, temperature elevation and evidence of peritonitis. Death occurred on the fifth postoperative day. No autopsy was obtained.

Shortly after this patient was observed, Dittler and McGavack<sup>1</sup> reported a similar case, an abstract of which follows.

A man aged 53 was seen four hours after the onset of severe abdominal pain, which was associated with gaseous eructations, nausea, vomiting and substernal oppression. He had had several similar episodes previously. Examination revealed the patient to be cyanotic, orthopneic, cold and clammy and complaining of severe abdominal pain. The auricles were fibrillating, and the ventricular rate was 120 per minute. The abdomen was tender throughout. Laboratory examinations revealed a leukocytosis and an elevated blood sugar. The electrocardiogram was interpreted as indicative of a posterior myocardial infarction. Further clinical course suggested coronary thrombosis, but upper abdominal pain, fever, abdominal tenderness and diarrhea persisted. The urinary diastase was normal. The patient died on April 26, 1937, forty-one days after the onset. Autopsy showed the pancreas to be converted into a boggy, soft mass which microscopically presented complete necrosis. The heart showed no evidence of coronary occlusion. The vessels were patent. The heart muscle was hypertrophied and showed little or no myocardial fibrosis.

In both of these cases definite electrocardiographic changes were observed during the course of the illness leading to a diagnosis of acute coronary disease, and in both the subsequent course demonstrated the presence of acute pancreatic necrosis. Our interest in this phenomenon was stimulated, so that we began to do routine electrocardiographic studies on patients with acute abdominal complaints. We have observed 4 subsequent cases, in all of which the diagnosis of acute pancreatitis was confirmed by either the clinical course (including blood amylase studies), operation or autopsy. Case reports are appended herewith.

**CASE 3**—E. B., a Negro aged 38, admitted to the Hospital for Joint Diseases on Dec. 5, 1941, had had abdominal pain, nausea, vomiting and obstipation for five days following directly after severe alcoholic excesses. The pain was severe and cramp-like. The vomitus contained bile but no fecal material. On admission the temperature was 99.8 F, the pulse rate 88 per minute, the respiratory rate 18 per minute. The lungs were normal. The heart sounds were good, no murmurs were present, and the blood pressure was 105 mm systolic and 82 mm diastolic. The abdomen was not distended. Tenderness was present in both upper quadrants with rebound tenderness and muscle spasm. A scout film of the abdomen showed several fluid levels. Laboratory examinations were normal except for a slight leukocytosis, a faint trace of albumin in the urine and a positive test for blood in the stools. The Kahn test was 1 plus and the sedimentation rate 65 mm. Several blood amylase studies were performed. On admission the blood amylase was 410 units. This progressively declined until on December 11 it was 315 units, on December 22, one day before discharge, it was 303 units and on December 28 it was 254 units. Several electrocardiograms were taken. On December 5 the

<sup>1</sup> Dittler, E. L., and McGavack, T. H. Pancreatic Necrosis Associated with Auricular Fibrillation and Flutter, *Am Heart J* 16:354 (Sept) 1938.

electrocardiogram showed a depressed  $RT_1$ , and diphasic  $T_1$ . This was interpreted as evidence of myocardial damage. On December 8 there was inversion of  $T_1$ ,  $T_1$  was diphasic,  $RT_1$  was depressed, and again the diagnosis of myocardial damage was made. On December 11  $T_1$  were isoelectric, and  $T_4$  was inverted. The clinical course was very suggestive of pancreatitis, and within two weeks all symptoms had subsided. On many occasions the heart was examined and was found perfectly normal despite the changes in the electrocardiograms, which were interpreted by the cardiologists as indicating coronary thrombosis. On discharge the patient was completely well. Follow-up studies revealed normal electrocardiograms.

CASE 4—R. H., a woman aged 50, admitted to the Hospital for Joint Diseases on Sept. 24 and discharged on Nov. 3, 1941, complained of diffuse cramplike pain in the abdomen particularly on the left side, two days before admission. The pain radiated to the back, was intermittent in character and fairly severe, and was accompanied by nausea and vomiting. There were no fever and no previous history of gastrointestinal disturbances. Examination on admission to the hospital was essentially negative except for tenderness and muscle spasm in the left upper quadrant of the abdomen. The blood amylase was elevated to 367 units. Other laboratory findings were within normal limits except for a moderate leukocytosis. Two days after admission a fairly severe paralytic ileus developed and persisted for several days but eventually responded to suction treatment with a Miller-Abbott tube. The blood amylase decreased to 89 units three days after admission. Complete roentgenographic examination of the gastrointestinal tract after recovery revealed only a poorly functioning gallbladder. The electrocardiographic findings were of great interest. On the day of admission the tracings showed a slurring of QRS. Three days later the electrocardiogram was still abnormal, showing a slurring and notching of QRS, low  $T_1$ , and depressed  $RT_1$ . On October 7, by which time recovery was almost complete, the electrocardiogram was normal. At no time was there any clinical evidence of heart disease.

CASE 5—L. B., a man aged 63, admitted to the Hospital for Joint Diseases on March 13 and discharged on April 29, 1941, first experienced severe, cramplike epigastric pain about twenty-four hours before admission to the hospital. He had four watery, black bowel movements. The pain became progressively more severe and was associated with vertigo and shortness of breath. On admission the patient was in acute distress, orthopneic and dyspneic. The temperature was 101 F, the pulse rate 96 per minute and the respiratory rate 22 per minute. The heart was normal except for an accentuated and bell-like aortic second sound and an occasional extrasystole. The blood pressure was 164 mm systolic and 110 mm diastolic. There were definite resistance to pressure in the epigastrium and great tenderness and rebound tenderness in this area. No masses were palpable. The urine was normal except for a diastase of 968 units. The white blood cells numbered 21,600 per cubic millimeter. The sedimentation rate was 26 mm and the blood amylase was 133 units. Several days after admission the blood amylase rose to 353. The course continued acute for about six days, and then the patient improved rapidly. The diagnosis of acute pancreatitis was made by both medical and surgical services.

The electrocardiographic findings were as follows:

March 13 (5 a. m.)	$T_1$ inverted $T_2$ low
March 13 (4 p. m.)	$T_1$ & $T_2$ inverted.
March 14,	$T_1$ , $T_2$ & $T_4$ inverted.
March 17	$T_1$ & $T_2$ inverted.
March 21	$T_1$ and $T_2$ inverted, $T_4$ diphasic. Occasional premature ventricular contractions.
April 1	$T_1$ and $T_2$ diphasic, $T_4$ upright.
April 3	$T_1$ low and upright, $T_2$ and $T_4$ normal.
April 28	$T_1$ , $T_2$ & $T_4$ diphasic (interpreted as normal).

CASE 6—D. W., a woman<sup>2</sup> aged 68 had been in good health except for hypertension for many years. The day prior to admission she complained of nausea and vomited three or four times. Weakness was pronounced at the onset and shortly thereafter she experienced severe upper abdominal pain which

was relieved by morphine. She became progressively more prostrated and went into shock about one hour before admission. At this time she appeared acutely ill, in shock, with rapid sighing respirations, cyanosis, particularly acral cyanosis, and cold upper extremities. The neck veins were distended. There were no heart murmurs, and the blood pressure was 50 mm systolic and 40 mm diastolic. There was a gallop rhythm over the entire precordium. The abdomen was slightly distended. The liver edge was not palpable. All reflexes were absent. The temperature on admission was 104 F. The electrocardiogram showed a sinus tachycardia, left axis deviation, small  $Q_1$ , deep  $Q_{2,3,4}$ ,  $RT$  elevation in all leads,  $T_1$  low. The changes were characteristic of acute anterior and posterior wall infarction, and the clinical diagnosis of acute coronary thrombosis was made. Death occurred three hours after admission. The autopsy revealed acute pancreatitis with fat necrosis involving the body of the pancreas, an acute fibrinopurulent peripancreatitis and early acute peritonitis. The pericardial cavity contained 50 cc of brownish red fluid. There was slight dilatation of the left ventricle. The coronary arteries were patent throughout. There was no acute infarction. The mitral valves showed a chronic rheumatic valvulitis.

The preceding case reports illustrate a consistent occurrence of electrocardiographic changes in pancreatitis. Some of the patients had only a mild pancreatitis, while others manifested a true hemorrhagic pancreatitis. The changes in the electrocardiographic pattern were not the same in all cases, yet they were of sufficient degree to be interpreted as myocardial infarction or coronary thrombosis. In all patients in this group the subsequent course with either death or recovery showed no evidence of an actual pathologic condition of the heart and we felt justified in assuming that the transitory changes in the electrocardiograms were due to the pancreatitis.

In an effort to determine whether these changes could be duplicated, a series of animal experiments was undertaken. It is very easy to induce acute pancreatitis in dogs by the injection of various materials into the pancreatic duct. The following technic was used.<sup>3</sup> Dogs weighing about 8.5 Kg were anesthetized with intravenous pentobarbital sodium (0.2 cc per pound). A preoperative electrocardiogram was then taken. Through a midline incision the accessory pancreatic duct was isolated and a suture placed around it but not tied. The duct was entered with a fine hypodermic needle and 5 cc of 12 per cent sterile sodium taurocholate solution was injected into the pancreas. The needle was withdrawn and the suture tied around the duct. The abdomen was closed in layers. Usually the pancreas became hemorrhagic immediately after injection, and within a few minutes large black or dark purple areas appeared throughout the gland. All dogs developed acute hemorrhagic pancreatitis. Electrocardiograms were taken immediately and at intervals of twelve or twenty-four hours until the animals died. The survival period varied from one to twelve days and at autopsy acute pancreatic necrosis was found in each animal. Five dogs were operated on in this manner. Control electrocardiograms were taken on anesthetized but dogs not operated on to rule out the possibility that any changes noted might be due to anesthesia. In all dogs in which pancreatitis was produced distinct aberrations of the electrocardiographic tracings were observed. These changes were inconstant in pattern but were usually interpreted as being indicative of myocardial damage. In none of the dogs was there

<sup>2</sup> This patient was in the service of Dr. Eli Moschowitz at the Mount Sinai Hospital who gave us permission to report the case.

<sup>3</sup> Gottesman, Julius, Casten, Daniel and Beller, A. J. Electrocardiographic Changes Associated with Acute Pancreatitis. *Proc. Soc. Exper. Biol. & Med.* 40: 365 (March) 1942.

either gross or microscopic evidence of myocardial damage or infarction. It must be mentioned that electrocardiograms in dogs are difficult to interpret and show variation due to changes in position and shifting of the mediastinum. To overcome this source of error, a normal pattern was established for each dog and standard conditions for obtaining the electrocardiographic tracing were observed.

#### ANALYSIS AND INTERPRETATION OF RESULTS

Changes in the electrocardiographic patterns have been observed in a variety of abdominal conditions, particularly those associated with disease of the biliary system, such as cholelithiasis, chronic cholecystitis or common duct stones. The mechanism of these changes is in dispute. It has been postulated that these variations are the result of reflex stimulation of the autonomic nervous system. Chamberlain, Scudder and Zwemer<sup>4</sup> observed changes in the electrocardiograms of cats in which a hyperpotassemia was induced by intraperitoneal injection of potassium chloride. In several clinical conditions associated with release of potassium ion from damaged cells such as intestinal obstruction or pancreatitis these observers noticed electrocardiographic changes. The frequent association of pancreatic pathologic changes in the presence of chronic biliary tract disease may account, in the light of our clinical and experimental studies for the changes so frequently observed in the electrocardiogram.

The clinical similarity between acute coronary thrombosis and acute pancreatitis is too well known to require further elaboration. We wish to point to a triad of symptoms which we feel should help to establish definitely this difficult diagnosis. These are (1) elevated blood amylase, (2) signs of upper abdominal peritoneal irritation and (3) variation from the normal in the electrocardiographic tracing, which may simulate coronary disease or myocardial infarction.

The possibility that these electrocardiographic changes could be produced by shock regardless of the causative factors, has been entertained. We have made repeated electrocardiographic studies on patients in clinical shock as a result of perforated peptic ulcer, intestinal obstruction, and after extensive surgical procedures on the gastrointestinal tract (gastrectomy, abdominoperineal resection, cholecystectomy for acute cholecystitis), and in none of these patients was the electrocardiogram interpreted as abnormal.

#### SUMMARY AND CONCLUSIONS

1 In a series of cases of acute pancreatitis, electrocardiographic abnormalities suggestive of myocardial infarction or coronary thrombosis was noted.

2 These changes in the electrocardiograms were induced in experimental acute pancreatitis in dogs.

3 Routine electrocardiographic studies in patients presenting acute upper abdominal syndromes should be done.

4 The triad of (a) elevated blood amylase, (b) upper abdominal peritoneal irritation and (c) electrocardiographic changes should establish the clinical diagnosis of acute pancreatitis.

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<sup>4</sup> Chamberlain, F. L., Scudder, John, and Zwemer, R. L. Electrocardiographic Changes Associated with Experimental Alterations in Blood Potassium in Cats, *Am Heart J* 18: 458 (Oct.) 1939.

## NAIL PUNCTURE WOUNDS

### SUMMARY OF THE RESULTS OF TREATMENT IN 721 CASES

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The care of nail puncture wounds in industry is important, especially in construction projects. In such projects boards containing nails are ubiquitous, and it is a simple matter to puncture some part of the body, especially the foot, by coming in contact with a nail. If the ground is muddy the injuries become even more common and the danger of infection more acute. Furthermore, the workman who suffers a nail puncture faces the possibility of two undesirable conditions: (1) secondary infection with a possible loss (or loss of function) of some part of the body and (2) tetanus, owing to the fact that nail puncture wounds are ideal for the growth of anaerobic organisms. The management is concerned not only with the loss of time on the part of useful employees but also with the expense incurred in caring for these occupational injuries. It is of interest to every one to have any data which might aid in the satisfactory treatment of such injuries.

A review of the literature of the last eight years reveals few reports of a nature comparable to that which we are presenting. Bowen<sup>1</sup> reported 661 cases of nail puncture wounds with no deaths, no tetanus and a disability average of 0.6 day. He opposed probing the wound and gave tetanus antitoxin to all. Walker<sup>2</sup> reported 220 cases with a method similar to that described here with no time lost except the remainder of the working day. He gave tetanus antitoxin to all and advised against soaking the foot. Festerling<sup>3</sup> reported no cases but described his method; he used a silkworm gut drain and did not give tetanus antitoxin. Kerrigan<sup>4</sup> did not give separate statistics but described the technic used in 445 puncture wounds. This consisted of scrubbing with neutral white soap solution, debridement at the point of entry, immobilization and injection of tetanus antitoxin in every case. There are many reports on the general care of wounds, but they do not concern puncture wounds by themselves.

#### REPORT OF CASES

At the Sunflower Ordnance Works Hospital during the period of June 1942 to March 1943 721 men were treated for nail puncture wounds. The results of treatment are set forth briefly in the accompanying table.

In the consideration of this subject we should call to mind that the period of time mentioned was accompanied by an excessively large amount of rain in Kansas and that most of the construction work was done (literally) in mud! Furthermore, the mud was typical black Kansas soil supposed to be well contaminated with anaerobic organisms of the tetanus type.

From the Medical Department, Sunflower Ordnance Works.  
1 Bowen, F. H. Report of Six Hundred and Sixty One Nail Puncture Wounds, *J. A. M. A.* 119: 413-414 (May 30) 1942.  
2 Walker, M. A. Treatment of Nail Puncture Wounds, *J. Kansas M. Soc.* 43: 453 (Nov.) 1942.  
3 Festerling, E. G. Simple Treatment for Puncture Wounds, *Am J Surg* 36: 360-361 (April) 1937.  
4 Kerrigan, R. L. Exclusive Use of Soap and Water in Traumatic Wounds, *Surg., Gynec. & Obst.* 57: 165-169 (Aug.) 1942.



**Technic**—The area surrounding the puncture wound was scrubbed well with liment of soft soap and water, then wiped dry with sterile gauze. With pointed scissors and small thumb forceps the edges of the wound were trimmed away through the entire thickness of the skin, leaving a round hole the edges of which did not approximate. The wound was then probed gently with a rough probe. This served to remove small particles of foreign matter and to determine the direction and the depth of the puncture. A blunt needle attached to a syringe was inserted in the direction and to the depth indicated by probing. From 1 to 2 cc of antiseptic solution was injected and allowed to return outside the needle thus irrigating the wound from its deepest point outward. This served to wash out small foreign bodies and other contaminants. Hydrogen peroxide solution, tincture of mercuric iodine and tincture of metaphen were used for this purpose. As more wounds were treated it was felt that a nonalcoholic antiseptic solution was better, hydrogen peroxide being found satisfactory. A dry sterile dressing was applied, and the patient was told to continue working and report back the next day, any swelling or excessive tenderness, however, was to be reported immediately.

Tetanus antitoxin 1,500 units, was given in 54.4 per cent of the cases. The decision as to whether or not tetanus antitoxin should be given was left to be determined in each individual case. Any person whose wound showed evidence of gross

small piece of rubber boot was removed. The patient recovered immediately.

Patients with mild infection were told to soak the affected part at home in hot epsom salt water. For more severe infection this treatment was supplemented with daily soaks at the hospital. Patients whose infection was frankly serious were hospitalized at the plant or referred to outside physicians to be cared for in the home or a hospital.

#### COMMENT ON RESULTS

The extremely low disability in all cases is significant. Furthermore, as we have already pointed out, a large share of these puncture wounds were from nails contaminated by soil, and in many cases the shoe itself, in which the patient had been working, was sodden with mud. A few patients were actually working in old manure areas. The average disability listed is only 0.07 day. The highest percentage of disability was 0.118 day per patient. There were no days lost by patients with wounds other than in the foot or the hand. Of the 721 men treated only 8 lost any time whatever. This figure is only 1.1 per cent of the total number. The average number of days lost for those who did lose time was  $6\frac{1}{2}$  days per patient.

We attribute the extremely low disability to two things: (1) the cooperation of employees in coming in immediately for treatment and (2) proper cleansing of the wound. There is nothing further to say, as the description of our procedure and the table itself, are sufficiently explanatory.

#### SUMMARY

The recent literature contains few reports of the nature of this one.

In a nine month period of much rain and mud 721 men were treated for nail punctures with satisfactory results. The average disability was only 0.072 day per injury.

The technic used consisted of (a) cleansing the outside of the wound, (b) trimming skin flaps and wound edges, (c) probing to the bottom of the wound, (d) irrigating with antiseptic solution from the bottom of the wound—hydrogen peroxide solution recommended, and (e) dry, sterile dressing.

Tetanus antitoxin was not given routinely. It was used when punctures were exceptionally deep or showed gross contamination or signs of infection.

In no patient did tetanus develop. Forty-three patients had secondary infection, 6 had infection severe enough to lose time. There were no deaths.

Results of Treatment of Nail Puncture Wounds

Site of Injury	Cases	Cases in Which Tetanus Antitoxin Was Given		Treatments per Case	Mor. bidity in Days	Cases in Which Wound Was Severely Infected		Disability per Day	Cases in Which Time Was Lost		Days Lost per Case
		No.	%			No.	%		No.	%	
Foot	424	275	65	1.56	2.23	24	5.0	0.118	7	1.6	7.14
Hand	908	80	41	1.53	2.20	16	1.7	0.090	1	0.5	2.0
Arm	4 <sup>a</sup>	18	4	1.02	2.05	1	2.4	0.0	0	0.0	0.0
Leg	34	10	30	1.44	1.52	2	5.9	0.0	0	0.0	0.0
Body	3	1	33	1.2	1.67	0	0.0	0.0	0	0.0	0.0
Head and neck	10	2	20	1.00	0.00	0	0.0	0.0	0	0.0	0.0
Totals	721	392	54	1.50	2.22	43	6.0	0.072	8	1.1	6.6

<sup>a</sup> This includes time until calls at the hospital were discontinued.

contamination was given tetanus antitoxin immediately. Many times it was given merely because the wound seemed excessively deep. Practically all those with wounds over  $\frac{1}{2}$  inch deep were given the serum. Men with severely contaminated wounds were given mixed gas bacillus tetanus antiserum. Several of the patients requested the serum themselves. The final decision as to whether or not to use it was usually made on the second day. Signs of infection, pain, tenderness, fever, swelling and regional adenopathy were taken as evidences of contamination and tetanus antitoxin was given. When administering tetanus antitoxin it was the rule to start with the intradermal sensitivity test. To those giving positive reactions either the serum was not given or, if definitely indicated, was given in divided doses. Tetanus antitoxin was given to 392 patients. There were five reactions, none constitutional and none severe.

Local infection developed in 43 of the 721 patients. Eleven of the 43 had not reported the wound until an average of 2.5 days had elapsed from the time of injury. Six of the 43 had infection severe enough to lose time, losing 8.16 days on the average.

Two men, one with a puncture of the hand and one with a puncture of the foot, lost two and one days respectively, because of local tenderness, but no other signs of infection were present. One wound healed quickly and gave no trouble until twenty-eight days later when tenderness developed. When the wound was reopened a foreign body, which seemed to be a

**First Medical Schools in America**—In the American colonies the early medical schools developed within the academic organization. The first of these was set up at Philadelphia in 1765 as part of the College of Philadelphia (later the University of Pennsylvania). The Medical School of King's College in New York (which was eventually to become the College of Physicians and Surgeons of Columbia University) was the second in 1768. The Harvard Medical School, the third institution of its kind in the colonies was opened in 1783 having developed from a lecture course in anatomy given to Harvard College students during the three previous years by the surgeon John Warren. All three of these schools were organized by the best qualified physicians of the respective communities; they set a high standard and had a strong influence on the subsequent development of American medicine.—Haagensen C. D. and Lloyd Wyndham E. B. A Hundred Years of Medicine, New York: Sheridan House Inc., 1943.

## Clinical Notes, Suggestions and New Instruments

### MASSIVE RESECTION OF THE JEJUNUM AND ILEUM FOR GUNSHOT WOUNDS OF THE SMALL INTESTINE AND ITS MESENTERY

#### METABOLIC STUDY FOLLOWING RECOVERY

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Resection is frequently indicated in the treatment of penetrating wounds of the small intestine and its mesentery. Wounds which have destroyed a section of the bowel, impaired its blood supply by injuries to its mesentery or caused large contiguous lacerations cannot be closed. Such wounds require resection. These lesions requiring resection may be multiple, involving various segments of the intestine with normal bowel between them. It is important to determine whether a single resection of the multiple wounds can be performed or whether multiple resections of the involved segments shall be undertaken. It is recognized that multiple resections definitely increase the mortality. There is no recorded case of a successful triple resection during World War I. If a single resection of the involved segments of bowel is elected, it may be necessary to remove an extremely long section. Therefore the total length of small bowel which can safely be removed without inducing severe metabolic disturbance must be known. Haymond,<sup>1</sup> in a review of 257 cases of massive resection of the small intestine, states that 33 per cent of the small bowel can be removed without nutritional disturbance, 50 per cent removal being the upper limit of safety.

The case reported here illustrates the metabolic balance obtained after removal of 8 feet of jejunum and ileum for multiple gunshot wounds involving the bowel and its mesentery.

#### REPORT OF CASE

E. A. T., white, a private First Class, aged 26, was admitted to Walter Reed General Hospital on Dec 9, 1942 by ambulance from a nearby army camp. One hour and fifteen minutes before admission the patient had been accidentally shot in the abdomen with a 0.45 caliber revolver. The point of entrance of the bullet was in the left lower quadrant, there was no point of exit.

Examination on admission revealed that the patient was in shock, the extremities were cold, the skin pale. The blood pressure was 90/60, the pulse 120, weak and thready in character. Abdominal examination revealed a bullet wound in the left lower quadrant 10 cm below and 7 cm to the left of the umbilicus. There was pronounced rigidity throughout the abdomen, associated with exquisite generalized tenderness. Liver dulness was not obliterated. There was shifting dulness in both flanks. The red blood count was 3,640,000, the hemoglobin 65 per cent, the white blood count was 40,000 with 74 per cent polymorphonuclears. The hematocrit was 25 per cent. A scout film of the abdomen showed that the bullet was embedded in the right acetabulum.

The signs and symptoms indicated intraperitoneal hemorrhage associated with intestinal perforation, and immediate operation was performed.

At operation, two and one half hours after injury, with cyclopropane-oxygen anesthesia, the abdomen was opened through a long left rectus incision. Approximately 1,200 cc. of blood was found in the peritoneal cavity and fresh bleeding occurred from three large lacerations in the mesentery of the small bowel. There were seven perforations in the jejunum and ileum, three of these destroying more than two thirds of the circumference of the bowel. The highest perforation was approximately 8 feet from the ligament of Treitz, the others, except for one, were situated in the adjoining 8 feet of the

jejunum and ileum. One perforation 1.5 cm in diameter was in the terminal ileum 5 cm from the ileocecal valve. There were three large wounds in the mesentery of the small intestine near its base, and the bowel in two areas of approximately 2 feet in length was blue-gray, showing definite evidence of impaired circulation. There was gross contamination of the peritoneal cavity by fecal contents of the small bowel. There were no perforations in the large bowel, bladder or stomach.

The massive hemorrhage from the mesenteric wounds was first controlled. Eight feet of jejunum and ileum, including the six perforations and the bowel with impaired circulation, was resected after ligation of the mesentery with suture ligatures. A side to side anastomosis was performed after the open ends of the small bowel were inverted. The perforation in the terminal ileum was closed with Connell suture, the closure being reinforced with Lembert stitches. No attempt was made to remove the bullet from the right acetabulum. Ten Gm of sulfanilamide was placed in the peritoneal cavity and the wound was closed in layers without drainage. The bullet wound of entrance in the abdominal wall was rapidly debrided. During operation 1,500 cc of citrated blood and 2,000 cc of plasma were given and, at the close of the operation, the blood pressure was 145/90 and the pulse rate 100.

TABLE 1—Nitrogen Balance

Date	Nitrogen Intake Gm	Fecal Nitrogen Gm	Nitrogen Absorbed Gm	Urinary Nitrogen Gm	Nitrogen Balance Gm
3/31/43	13.23	1.72	11.56	11.2	+0.55
4/ 2/43	13.28	1.9	11.38	10.8	+0.58

TABLE 2—Study of Feces

Date	Weight Gm	General Appearance	Blood	Total Fat Per Cent
3/31/43	184	Normal	Negative	20.8
4/ 2/43	175	Normal	Negative	22

TABLE 3—Serum Proteins

Date	Total Proteins, Gm per 100 Cc.	Serum Albumin, Gm per 100 Cc.	Serum Globulin, Gm per 100 Cc.	Albumin Globulin Ratio	Non protein Nitrogen Mg per 100 Cc.
3/22/43	5.13	2.2	2.93	1/1.3	30
4/12/43	5.89	3.65	2.04	1.9/1	30
4/14/43	6.24	4.62	1.62	2.6/1	28
4/21/43	6.01	5.2	1.71	3/1	30

Immediately after operation a Levine tube was placed in the stomach and continuous suction applied. The patient was given sulfadiazine intravenously and the blood level was maintained at 12 mg per hundred cubic centimeters. Fluid balance was maintained by daily infusions of 5 per cent dextrose and saline solution, blood plasma and blood transfusions. To maintain fluid balance it was necessary on the fourth postoperative day to give 6,000 cc of fluid intravenously. A daily blood count and hematocrit were taken and the blood chlorides checked repeatedly. The patient developed a mild alkalosis with the carbon dioxide combining power 71 volumes per cent, which was controlled by intravenous sodium chloride. On the fifth postoperative day the Levine tube was removed and 1 ounce (30 cc) of water given every hour. This amount was increased to 2 ounces the following day, and thereafter increasing amounts of fluid and food were given. Vomiting did not occur at any time after operation. The first bowel movement was on the sixth postoperative day. For several days the bowels moved three or four times daily and the stools were watery. However, after the tenth postoperative day the bowels moved once daily and the stools were solid. The temperature remained at 102 F until the tenth postoperative day, when it dropped to normal and remained normal throughout convalescence. The operative incision healed by first intention and the bullet wound of entrance healed cleanly by granulation. The patient was

From the Surgical Service, Walter Reed General Hospital.  
1 Haymond, H. E. Massive Resection of the Small Intestine, Surg., Gynec. & Obst. 61: 693 (Nov.) 1935.

allowed out of bed on the twenty-eighth postoperative day. He was given a furlough, and on return metabolic studies were instituted.

#### METABOLIC STUDIES

On March 19, the eighty-ninth postoperative day, the patient was placed on a general diet containing 3,127 calories, with protein 83 Gm, fat 111 Gm and carbohydrate 448 Gm. The nitrogen content of this diet was 13.28 Gm. The factor 1/625 was used for conversion to nitrogen. Stools and urines were collected, the former in concentrated sulfuric acid, the latter under xylene, and the twenty-four hour contents of the twelfth and fourteenth day were determined for nitrogen and fat. The micro Kjeldahl method was used to determine the urinary nitrogen and serum proteins, while the macro Kjeldahl was used for fecal nitrogen. All determinations were done in triplicate. Total fat was done by Saxon's method. The results are shown in tables 1 and 2. Serum protein studies are presented in table 3.

In addition to the results shown a dextrose tolerance test and gastric analysis were normal. The blood cholesterol was 188 mg per hundred cubic centimeters, cholesterol esters 81 mg per hundred cubic centimeters, calcium 10.4 mg per hundred cubic centimeters and phosphorus 3.7 mg per hundred cubic centimeters. Routine hematologic and urine examinations were normal. The patient showed a progressive gain in weight as follows: Jan. 5, 1943, 145 pounds (66 Kg.); February 4, 152 pounds (69 Kg.); March 7, 156 pounds (71 Kg.); April 23, 160 pounds (72.6 Kg.). The patient's normal weight, prior to the accident, was approximately 165 pounds (75 Kg.).

The results indicate that the patient's metabolic functions were normal. The fact that the studies showed a positive nitrogen balance and a progressive increase in serum proteins indicated that a depletion of body protein had existed for several months subsequent to operation but was being rectified.

It cannot be ascertained from this case just how much bowel can be resected without causing pronounced metabolic changes. However, it is shown that normal metabolic function can be maintained with resection of 8 feet of the small intestine.

#### FOLLOW-UP

The patient was examined on June 1, six months after operation. He had maintained his weight at 160 pounds. His bowels moved once daily and the stools were formed. The wounds were firmly healed. A gastrointestinal series showed that the stomach, duodenum and upper jejunum were normal. The distal jejunum showed slight dilatation and exaggerated peristalsis, while the mobility and peristalsis of the ileum were normal. The ileocecal region appeared normal and there was no abnormal retardation of the barium meal.

#### COMMENT

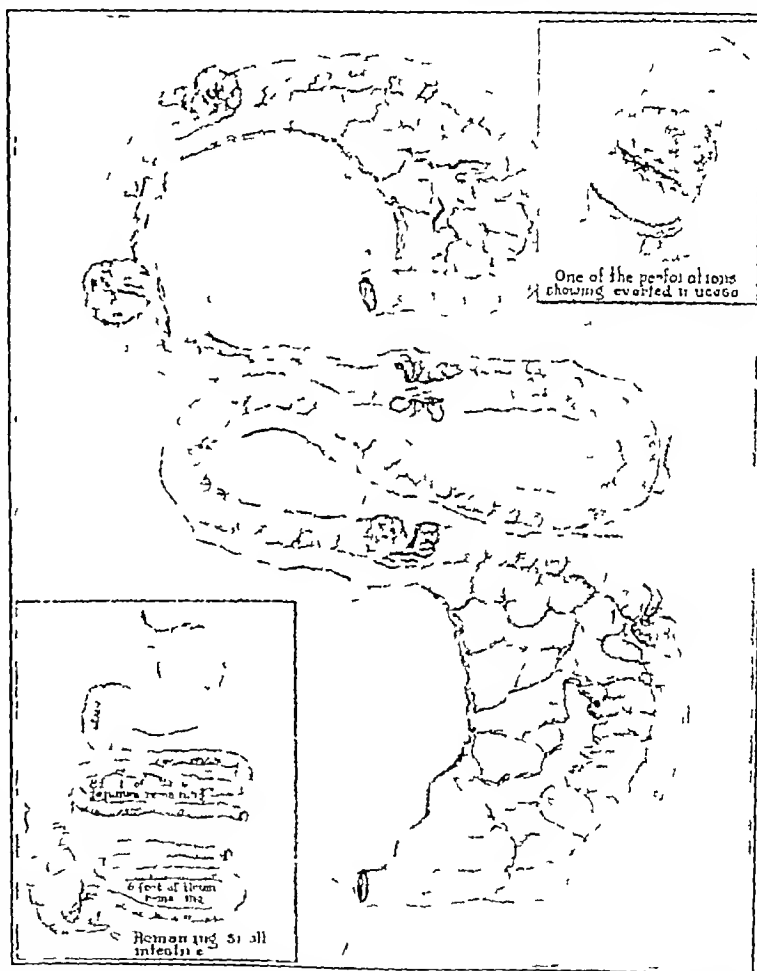
This case illustrates several problems in the treatment of gunshot wounds of the small intestine.

Three segments of bowel required resection, the upper and lower segments because of pronounced impairment of their blood supply, the middle because of destruction of two thirds of the bowel wall in one area and almost complete severance in another. These three segments were all contained within 8 feet of small intestine. It was believed that a massive resection of the involved segments, together with interposed normal intestine, could be more rapidly and safely performed than three separate resections of the involved areas. Fortunately, many penetrating wounds of the intestine can be closed by suture and these wounds should never be resected. However, if the wounds are of such a nature that there is no alternative to resection it is suggested that a single resection, rather than multiple resec-

tions, be performed if the involved segments occur within an 8 to 10 foot length of bowel.

The thought of fecal contents pouring into the peritoneal cavity may be appalling and lead one to concentrate on rapid control of this contamination. It is the control of hemorrhage which must receive first attention. It is important to have blood available and flowing into the patient before the peritoneum is opened, for often bleeding temporarily stopped will recur on the first exploratory manipulation. At times, massive transfusions will be required to control shock during operation. This patient required 1,500 cc of citrated blood and 2,000 cc. of plasma.

Too much emphasis cannot be placed on the importance of a final, careful search for additional perforations. It has been



Appearance of specimen showing multiple perforations of the small bowel and its mesentery. Inset shows location of removed segment. (Army Medical Museum)

written that such a search should be made only if the patient's condition warrants it. Bohrer<sup>2</sup> states that 'no matter what the condition of the patient, he will never be in better condition to close the last perforation.' It was only after the final search in this patient that the perforation of the terminal ileum was discovered.

#### SUMMARY

- 1 In a case of multiple gunshot wounds of the small intestine and its mesentery requiring resection, normal metabolic function was maintained following resection of 8 feet of jejunum and ileum.
- 2 The treatment of associated hemorrhage is important.
- 3 If resection is indicated, a single resection rather than multiple resections should be performed for lesions lying within an 8 foot segment of intestine.

2 Bohrer, John V. Personal communication to the authors.

**Special Article****AMERICAN HEALTH RESORTS****THE ADMINISTRATION, SUPERVISION  
AND CONTROL OF HEALTH  
RESORTS**

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*These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.*

**I OWNERSHIP**

Unlike most spas in continental Europe, American health resorts are generally privately owned. Such resorts as Hot Springs, Va., French Lick, Ind., Glen Springs and Sharon Springs, N. Y., Arrowhead Springs, Calif., those at Mineral Wells and at Marlin, Texas, and many others are in the hands of privately formed corporations or individuals. The best known examples of government owned resorts are the Thermal Water Reservation at Hot Springs, Ark., the New York State Spa at Saratoga Springs, the state controlled springs at Thermopolis, Wyo., and the municipal development at Excelsior Springs, Mo. A survey of the field shows that the form of ownership seemingly bears little relation to the extent of the medical and physical development of a resort.

**II ADMINISTRATION**

Ownership is not always the deciding factor in the type of administration. Perhaps the factors of extent, of objective and of medical and physical development may be more truly determined by the type of administration than of ownership. Privately owned resorts may range from single sanatoriums of long time family ownership all the way through various median arrangements to the true spa of tremendous natural resources and extensive physical equipment, exacting medical control and adequate financing. Many privately owned health resorts in this country are under strictly private control whether by direct ownership or by control of a holding corporation. Where the owner is an individual, he or a close associate usually heads the administrative setup and may also be the executive head of the project, with the probable addition of medical, engineering, chemical or other technical administrators as needs may arise. Some of the better known watering places of this country, such as Mount Clemens, consist of a group of hotels or sanatoriums which has grown up around the source of mineral waters or in an area in which such waters are readily found.

If the administration of the health resort is the function of some governmental unit, several possibilities arise. At Hot Springs, Ark., the mineral water and the lands on which they emerge are owned by the federal government, and water is metered to a government owned charity bath house as well as to many privately owned hotels and bath houses which are operated for private

gain but under very strict regulations set up by the United States Department of the Interior. State owned health resorts are generally administered by commissions or committees which are essential parts of major state departments. They may direct the complete operation of the spa or may grant concessions for its operation by private individuals or corporations. At Saratoga Springs the springs and lands are state owned with activities of the spa directly state operated, except the Cure Hotel.

In any case, of course, the duties of the administrative body of a health resort include the establishment of a general policy by defining the accredited values of the waters or climate and by determining the types of ailments to be treated, the types of patients to be received and the kind of accommodations and treatments to be furnished. A second duty is to plan for the financial setup of the resort. Such planning must cover the original investment—purchase of land and erection of buildings, installing equipment and so on—as well as an operating budget, including taxes, debt service and depreciation. It must also explore all sources of revenue either from endowment or from current receipts or, in the case of government owned spas, from legislative appropriation for maintenance, or a combination of all or any of these. The third duty of the administering body is the setting up of a definite operating organization with a corresponding program of duties and responsibilities.

**III OPERATION**

For any health resort, whether large or small, a general operating outline can be considered which will naturally adapt itself to variations in the size, nature and objectives of any such resort. Essentials of such an organization are, of course, an executive head, whatever his title, and under him the necessary branches of responsibility, perhaps as follows:

- (a) Medical
- (b) Engineering and construction
- (c) Chemical
- (d) Accounting
- (e) Legal
- (f) Maintenance
- (g) Public relations

Only in large organizations will entirely separate departments be formed for each of these titles, but problems under each heading will exist and must be handled by the executive head or by some one under his direction. These various branches of the organization with proper interrelations will cover all fields of activity, which might be listed somewhat as follows:

- (1) Mineral water control and conservation
- (2) Bath houses (therapeutic treatments)
- (3) Hotels and boarding houses and sanatoriums
- (4) Recreational facilities (a) library, concerts, theater, sporting events, (b) paths and drives, golf, other sports, winter sports
- (5) Parks, grounds and landscaping
- (6) Merchandising all by-products, including bottled waters
- (7) Publicity, promotion and advertising
- (8) Research and investigation
- (9) Planning
- (10) Maintenance and construction

These activities can be carried forward only through cooperation among the various branches of the organi-

zation, with, nevertheless a careful subdivision of the work and of the responsibility of each of these groups

(a) *Medical*—The medical staff will establish regulations governing the methods of treatment, will provide for training and instructing attendants and directing their work with patients and will of course, exercise complete supervision of administering all treatments to patients. This not only will apply to giving of mineral baths packs inhalations and other treatments with mineral waters but will also cover the use of adjunct physical therapeutic treatments

Only in large institutions will it be practicable for the medical department to establish a formal school for attendants. Yet much training can be accomplished by informal methods of teaching in connection with the direction and supervision of the new attendants who have received training and experience either in special schools or at other spas. One very important point in such training is the instruction of the attendant in the recognition of danger signs which may appear with various medical conditions. Such danger signs must be reported immediately to the medical staff or to the patient's physician

Medical care may be provided in three general ways. First, the direct and complete supervision of the patient's entire program by a physician employed by the institution offers most complete control with consequent close relationship between the institution and the patient. However extreme seasonal variations in the number of patients at most health resorts make it difficult to maintain the large year round medical staff which is required

A second method is through a more general administrative supervision of the patient's program by medical personnel. This plan offers less individual control of each patient but is of course possible of operation with a much smaller medical staff

The third way of providing medical care of patients at a health resort is the most usual one. The patient places himself under the care of a regularly practicing physician of the vicinity who is experienced in the program of treatments at the resort. This physician prescribes treatment, watches the patient's progress and advises him. This relation is entirely outside the control of the institution, except that most resorts are prepared to give to their patients a list of available experienced physicians

Patients at private institutions are practically all paying patients, while governmental institutions frequently make considerable provision for charity cases. At Hot Springs, Ark., and at the Saratoga Spa such patients are required to submit proof of inability to meet costs of treatment. In such cases living accommodations during the treatment period are usually provided through charitable organizations, friends of the patient or other sources. This group of patients receives medical direction from physicians of the staff without charge

Cooperation with the medical profession should provide for complete information to the patient's home physician by correspondence or conference. General dissemination of sound medical information to the profession is accomplished through the publication of explanatory literature and of scientific articles, as well as through lectures before medical organizations. Other important duties of the medical department will be the careful planning of a program of investigation and

research as to the use of the natural curative agents available and the collaboration of such research work with the chemical and physical departments, as well as the establishing of a library of reference works or scientific publications on the subject

(b) *Engineering and Construction*—In establishing and operating a health resort, particularly in widening the scope of its activities, engineering problems of prime importance arise. The engineer must give deep study to the unusual conditions to be met in specifying the design of plant, buildings and equipment for a health resort and proper construction and installation must be in the hands of competent engineers and architects. Falling as it does between the field of use of a hotel and that of a hospital, care must be taken not to lapse into the error of accepting design and methods for either of these alone as a satisfactory standard. Of no small importance is the layout of parks and grounds with appropriate landscaping, and such design must be integrated into the whole plan, under the general policy set forth by the administrative body

Conservation and care of sources of mineral water or other natural therapeutic agents should be completely in the hands of the engineering department, with thorough cooperation from the chemical and medical departments as required. Supervision of technical maintenance and physical operation comes within the jurisdiction of this department, as do manufacturing methods if a product is manufactured. The engineering department must offer complete research cooperation with the chemical and medical branches and the adoption of research results to methods of operation must be a responsibility of the engineer in charge

(c) *Chemical Control*—A chemical department will arrange for and carry on routine control analyses of the waters and of possible products, without which control neither the medical nor the engineering department can proceed on a firm footing. The chemical department will cooperate with the engineering department in the care and conservation of sources of the water and will provide technical advice on problems of operation and maintenance, particularly in the maintenance of plant and equipment. This department will have a large share in research investigation as laid out in collaboration with the medical director. Such research will obviously strive for one or more of the following objectives

(1) Information regarding the origin and sources of the mineral waters or other natural therapeutic agents

(2) Correct practice in the known uses of the natural resources in treatment of disease.

(3) Search for new and improved therapies using the natural resources

(d) *Accounts*—The accounting department is responsible for periodic profit and loss statements of operation, furnishes information for control of finances, should have entire charge of and responsibility for handling and reporting receipts and income and should furnish cost accounting in detail for all branches of the business of the resort

(e) *Legal Division*—The legal department will be perhaps more responsible to the administering body than to the executive and will furnish legal advice and opinions to the administrative group. It will draw or approve all contracts and other legal papers and will handle all court actions of any nature whatsoever or will



advise as to the employment of necessary counsel. This department should provide supervision of legal safeguards of operation, with consultation for the executive head of the resort, including interpretation of federal, state and municipal laws which may apply, and including also advice as to requirements for insurance coverage of all kinds.

(f) *Operation and Maintenance*—Operation and maintenance will cover the innumerable items of physical maintenance and repair of plant, administering of treatments, providing means for entertainment of patients and visitors and manufacture of by-products if they exist. This department will be in charge of personnel, their selection, instruction, direction and supervision, with particular attention to the attitude of the personnel toward patients and visitors. Here is the closest and most continuous relationship with visitors, and courtesy and consideration, tact and honesty must be stressed. This division can be of inestimable value to the resort in its recommendations to the administrative body for future planning of operations or of enlargements.

(g) *Public Relations*—The public relations of a resort may be only a portion of the duties of the owner or general manager or it may blossom forth into a complete department. At any rate its function will include supervision of direct paid advertising in newspapers, periodicals and radio programs, and displays of any sort ranging from small window displays to large exhibits at conventions or fairs. Likewise there will be promotional instruction of the resort personnel in their work with patients and visitors. The writing of pamphlets and articles and the editing of technical publications of the research or technical departments offers a wide field. All such material will be subject to review by the medical staff.

The director of public relations will carry on much of the correspondence, including careful answering of inquiries, circularizing of physicians and keeping in contact with past and potential patients. In all these activities the public relations department will find means of attracting patients to the resort. Organization of entertainment and recreation for patients and visitors is so important that it might well be made a separate branch of the work, requiring tact and skill.

If by-products of any nature are marketed by the health resort for public consumption, a separate sales organization will undoubtedly be set up. However, its advertising and sales material must be subject to the same considerations of accuracy and honesty as are all other spa publications.

#### IV OPPORTUNITIES AND RESPONSIBILITIES

Opportunities and responsibilities which will come to every health resort include:

The opportunity for the development of natural therapeutic resources with the responsibility that it be accomplished along scientifically controlled lines.

The opportunity for the alleviation of chronic ailments, with the responsibility for frank accrediting to all factors involved.

The opportunity for the direct care of patients with the responsibility for strict observance of medical and business ethics.

The opportunity to advance public knowledge of the benefits of Spa Therapy with the responsibility for avoiding any savor of "showmanship."

## Council on Pharmacy and Chemistry

### REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT  
AUSTIN E. SMITH, M.D., Secretary

#### THE METRIC SYSTEM

Announcement by the Council on Pharmacy and Chemistry<sup>1</sup> that New and Nonofficial Remedies, Useful Drugs, the Epitome of the U. S. Pharmacopeia and National Formulary and Interns Manual (with the consent of the Council on Medical Education) as well as other Council publications will henceforth give quantities and dosages exclusively in the metric or centimeter-gram-second system marks a step of no little importance in the progress of rational medicine. The necessary conversion tables will of course be printed in each volume.

The traditional system of measures and weights (later codified as the imperial or foot-pound-second system) and the centimeter-gram-second systems afford an entertaining contrast. Each system is based on units of length, mass and time. The traditional measures are ancient in origin and historically have been derived from anatomic structures or articles of common use. The foot was originally the length of any one's foot, regardless of size and style of shoe. This very variable measure prevailed until Edward II (A. D. 1324) decreed that "three barley corns, round and dry, shall make an inch, twelve inches a foot, three feet a yard." In recognition of the need for uniformity, it was decreed that the barley corns must be taken from the center of the ear and placed end to end.

Other units of length were the cubit, or the length of the forearm, this was used in ancient Egyptian, Hebrew and Roman mensuration, the yard, which Henry I is said to have decreed should equal the distance from the point of the knigly nose to the end of the regal thumb. The rod, which was defined as the "combined length of the left feet of sixteen men when lined up 'heel to toe' as they left church on a Sunday morning."

Bulk was first measured by the armful, the handful and the pinch, the latter also being known as the pugil and, according to a footnote in a 1793 edition of Wesley's Primitive Physics, consisting of "as much as you can take between your thumb and two forefingers."

When clearer standardization of bulk measurement came it was based first on cereals (whence we get our present method of estimating weight by grains) and later on coinage, as illustrated by the pound—in England both a weight and a money and established thus in 1266.

"An English penny, called a sterling, round, and without clipping, shall weigh thirty-two wheat corns from the midst of the ear, and twenty pence shall make an ounce, and twelve ounces one pound, and eight pounds do make a gallon of wine, and eight gallons of wine do make a London bushel, which is the eighth part of a quarter."

A standard yard has of course been preserved as a basic measure, however, since the time of Henry VII and Elizabeth, the Imperial Standard Pound is preserved as a standard of mass and there is a standard gallon as a corresponding measure of volume. The unit of time is fortunately the same in the imperial and the metric systems.

In the middle ages nearly all the principal towns or seats of commerce had their own weights and measures, the pound, foot, gallon and so on varying from one town to another. The avoirdupois system was introduced into England from Bayonne about A. D. 1300 and is substantially the Spanish system.<sup>2</sup> The pound avoirdupois is the standard weight of Great Britain. One pound avoirdupois = 16 ounces = 256 drachms (= 7,000 grains troy).

The pound of Troyes (a town in France) in the early part of the fourteenth century was adopted to some extent in other places and in England. Later troy weight lost recognized connection with a locality and was adopted for British coinage in

<sup>1</sup> Annual Meeting of the Council on Pharmacy and Chemistry, J. A. M. 121: 839 (March 13) 1943.  
<sup>2</sup> The Pitt Morian 6: 78 (Nov. Dec.) 1941.  
<sup>3</sup> The Century Dictionary, Revised and Enlarged Edition, New York, 1914.

1527 It is now used only for weights of gold and silver One pound troy = 12 ounces = 240 pennyweights = 5,760 grains

Apothecaries' weight, the system of weights formerly in Great Britain and still in the United States, employed in dispensing drugs, differs only in its subdivisions from troy weight One pound apothecaries' weight = 12 ounces = 96 drachms = 288 scruples = 5,760 grains

By the British medical act of 1858 and the act of 1862, the General Council of Medical Education and Registration of the United Kingdom are authorized to issue a "Pharmacopoeia" with reference to the weights and measures used in the preparation and dispensing of drugs and so on.<sup>4</sup> The British Pharmacopoeia issued by the Council in 1898 made no alteration in the imperial weights and measures required to be used by the Pharmacopoeia of 1864 For all pharmaceutical purposes, however, the use of the metric system alone was employed in all paragraphs relating to analysis, whether gravimetric or volumetric The new British Pharmacopoeia employs metric measures of capacity

Information supplied by Dr E. Fullerton Cook reveals that in colonial days the English system of weights and measures was largely employed in American medicine, and these naturally found their way into the early U S Pharmacopoeia, which was modeled after the London Pharmacopoeia The metric system, however, began to gain popularity and at the convention of 1870 its adoption in all formulas or parts by weight was recommended, apparently as a sort of halfway measure The Revision Committee of 1870 failed to carry out this proposal and explained it in the following statement (See U S P 1870, preface, page vii)

"In the series of resolutions passed by the Convention for the guidance of the Committee, it was directed 'that measures of capacity be abandoned in the Pharmacopoeia, and that the quantities in all formulas be expressed both in weights and in parts of weight' To execute such directions entails the use of a metrical system not employed in this country or in England, and which would have to be constructed for the purpose. Such a change would involve changed proportions in almost every formula and would produce a corresponding disturbance in many of the doses Moreover, such directions were not anticipated in any of the revisions handed to the Committee, and to institute such extended experiment as would cover the whole ground of the directions of the Pharmacopoeia would entail so much expenditure of time, labor and cost as to render the plan impracticable. This view of the question was unanimously taken by the Committee at a meeting consisting of ten members"

The failure to meet this modern development was severely criticized and led to a movement which changed materially the Pharmacopoeia. In the U S P 1880 parts by weight were introduced for formulas, but the metric system was established for all tests and reagents Each convention since 1880 has specifically directed the inclusion of the metric system in Pharmacopoeial formulas and tests However, when the convention of 1900 directed the introduction of average doses it directed that the metric system be used in expressing doses but that the approximate equivalent in ordinary weights and measures be inserted in parentheses This is the only use of the apothecary system of weights and measures in the body of the present Pharmacopoeia. Not only does the Pharmacopoeia give "preference to the metric system, but the convention of 1940 "instructed the Committee on Revision to retain the metric system of weights and measures

The origins of the metric system, in contrast to the traditional or natural system, are relatively modern and completely rational The plan on which the decimal system of interrelated measures and weights is based was devised in 1783 by the English engineer James Watt, who is declared to have thought this his greatest invention.<sup>5</sup> Watt conferred with Laplace and other eminent French scientists in Paris in 1786 The actual units of the metric system were established by a committee of the French Academy of Sciences acting for the French government The metric standards were officially adopted in France in 1799<sup>6</sup>

The fundamental unit of the metric system is the unit of length or meter, the unit of volume or liter is a cube of 1/10 meter side, the gram, or unit of weight, is 1/1,000 the weight of a liter of water at 4 C, its temperature of greatest density

From the meter and gram are derived, by merely moving the decimal place, the scientific measures of length required from geographic distances to the units of cytology ( $\mu$ , microns) and those used in the measurements of atomic spacing and radiation (angstrom units) and all metric units of mass and volume The scientific units of velocity, acceleration, force, energy, work and power are simply and logically derived from the fundamental metric units, as indeed the complex units of all the pure and applied sciences may, with the aid of certain conversion constants, be derived step by step without break in logic.

The metric system was in 1937<sup>7</sup> obligatory in Argentina, Austria, Hungary, Belgium, Brazil, Chile, France, Germany, Greece, Italy, Mexico, Netherlands, Norway, Peru, Portugal, Rumania, Spain, Sweden, Switzerland and Yugoslavia. Its use is legalized in Egypt, Britain, Japan, Russia, Turkey and the United States In 1875 there was constituted at Paris the International Bureau of Weights and Measures, which is managed by an international committee The object of the bureau is to make and provide prototypes of the meter and kilogram for the various subscribing countries

A search of the older issues of THE JOURNAL and the still earlier Transactions of the American Medical Association will reveal that there was some discussion of the use of the metric system prior to 1878, but in that year a resolution was introduced and passed by the American Medical Association which recognized the value of the metric system and " recommends to all physicians the use of the same in their practice and in their writings and teachings" The next year a report by Dr Seguin of New York closed with a resolution which was unanimously adopted, as follows "That the American Medical Association adopts the International Metric System, and will use it in its transactions, papers, requests the medical boards of the hospitals and dispensaries to adopt the Metric System."

In 1880 the Metric Executive Committee of the American Medical Association, after reviewing the situation, "Recommends the teaching and practice of the metric system in medical colleges, clinics, dispensaries etc. Charges its Executive Metric Committee with the duty to report annually on the above institutions which teach, and those who do not teach the metric system. Authorizes said committee to enter into communication with the Metric Committee of the British Medical Association, in order to concert such plans as may render the use of the metric system simultaneous and uniform in both countries"

THE JOURNAL for 1890 carries a letter from a committee of the American Association for the Advancement of Science appointed in 1889 to promote the use of the metric system This letter states in part "One of the principal reasons why the metric system has not yet been adopted in this country by professional men is the indifference shown by our professional schools

As the metric system is legal throughout the United States, any physician is entitled to present a metric prescription to the druggist. All boards of examiners in medicine and pharmacy, whether state or collegiate, are justified by law to exact, and should demand from every candidate for graduation or for license a knowledge of the metric system" It was also recommended " that schools of medicine cease to give instruction in the apothecaries' system of weights and measures, for which there is no longer any reason "

Other resolutions and discussions have appeared frequently in THE JOURNAL.

A member of the headquarters staff of the American Medical Association, out of curiosity, called four leading pharmacies in the Chicago loop to ask what percentage of their prescriptions were written in the metric system The results were as follows

(a) Seventy-five per cent in metric, more and more are using the metric system

(b) Forty per cent using the metric system Some physicians use both metric and apothecaries in the same prescription

(c) Twenty-five per cent using metric. Not increasing

<sup>4</sup> Encyclopedia Britannica ed 14 15:138 1937  
<sup>5</sup> Drury A The Metric Advance All America Standards Council San Francisco 1926 p 12

<sup>6</sup> The Metric versus the English System of Weights and Measures National Industrial Conference Board Research Report No 42 New York Century Company October 1921

<sup>7</sup> The Encyclopedia Britannica ed 14 15:362 363 1937

(d) Seventy per cent using metric Number increasing The younger men are more inclined to use metric

It would seem that some small progress has been made Further progress can be developed by employing the metric system whenever possible, especially in teaching centers and during the preparation of papers for publication, and by the adoption of this system of dosage by drug manufacturers Apparently the use of this system would not be objected to by official bodies, regulatory or otherwise

The universal use of the metric system in scientific work, its adoption for general purposes in many countries and its practical simplicity have always been sound reasons for the use of the metric system in medicine The immediate and practical stimulus to the Council in deciding to adopt the metric system exclusively in its publications has been the occurrence of serious accidents in dosage due to confusion between the two systems The Council particularly would like the cooperation of teachers and students in our medical schools and of the firms making pharmaceuticals and biologicals in using the metric system It would like to invite its engineering colleagues to consider an equivalent step The universal adoption of the metric system would be a manifestation of rationality and of interprofessional and international cooperation of high practical utility

## NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION

AUSTIN E SMITH, M D Secretary

**DIDOQUIN**—5,7-Diodo-8-hydroxyquinoline,  $C_8H_5N_2O$   
 $I_2$ —A compound resulting from the introduction of two atoms of iodine into 8-hydroxyquinoline



**Actions and Uses**—Didoquin is proposed as an antiprotozoan agent for use in amebic dysentery and in the treatment of *Trichomonas hominis* (intestinalis) infections

**Dosage**—Adults—seven to ten tablets a day for fifteen to twenty days

### Tests and Standards —

Didoquin occurs as a yellowish brown, practically odorless powder It is almost insoluble in water, sparingly soluble in alcohol ether and acetone, soluble in hot pyridine and in hot dioxane Didoquin melts between 200 and 215 C with extensive decomposition

Warm a few crystals of didoquin with 1 cc. of concentrated sulfuric acid vapors of iodine are evolved Heat 0.5 Gm of didoquin mixed with 5 Gm of anhydrous sodium carbonate in a deep crucible, cool, extract the mixture in 10 cc of water acidify with diluted nitric acid Filter and add 13 cc. of tenth normal silver nitrate solution to the filtrate Shake to coagulate the precipitate and filter Add 1 cc. of tenth normal silver nitrate solution to the filtrate, shake and filter through a fresh filter paper Wash the precipitate on the filter a yellow color is observed (distinction from iodoform which gives a white precipitate)

Dry 1 Gm of didoquin over phosphorus pentoxide for twenty four hours the loss in weight is less than 0.1 per cent

Incinerate about 1 Gm of didoquin the ash is not over 0.5 per cent

Mix about 0.15 Gm of didoquin, accurately weighed, in a nickel crucible with 5 Gm of anhydrous potassium carbonate (or sodium carbonate) Mix thoroughly with a dry stirring rod, settle the mixture by tapping the crucible, overlay with 5 Gm of potassium carbonate (or sodium carbonate) and ignite at about 600 C for from three to five minutes Cool, transfer the crucible to a 500 cc. wide mouth conical flask and extract with about 20 cc of distilled water Acidify the solution carefully, dropwise, with five normal hydrochloric acid (about 30 cc) Filter the solution quantitatively into a 250 cc glass stoppered flask, using two 20 cc portions of water to rinse the flask and filter paper The volume at this point should be about 100 cc. Add a cooled mixture of 35 cc of hydrochloric acid, 35 cc of distilled water, and add 10 cc of purified chloroform. Titrate with tenth normal potassium iodate to the disappearance of pink color in the chloroform layer (add iodate solution dropwise and shake vigorously near the endpoint) One cc of tenth normal potassium iodate solution is equivalent to 0.00423 Gm of iodine Didoquin contains not less than 60.5 per cent nor more than 64.0 per cent of iodine

G D SEARLE & CO, CHICAGO

Tablets Didoquin 0.21 Gm

U S Trademark No 336,484

## Council on Foods and Nutrition

AT THE REQUEST OF THE COUNCIL, THE BOARD OF TRUSTEES APPROVED A SMALL GRANT FOR CONDUCTING A STUDY OF THE NUTRITIVE VALUE OF PREPARED CEREAL FOODS AND THE GRAINS FROM WHICH THEY ARE MADE THE FOLLOWING REPORT REPRESENTS A PRELIMINARY ACCOUNT OF THE RESULTS THAT HAVE BEEN OBTAINED IN THE ANALYSIS OF A NUMBER OF PRODUCTS IN AUTHORIZING PUBLICATION OF THIS REPORT THE COUNCIL DESIRES TO EXPRESS ITS APPRECIATION OF THE COOPERATION OF DR C A ELVEHJEM AND MR GEORGE KITZES

GEORGE K ANDERSON, M D, Secretary

## VITAMIN CONTENT OF PREPARED CEREAL FOODS

GEORGE KITZES, M S

AND

C A ELVEHJEM, PH D

MADISON, WIS

Grain products have always been an important component of the American diet Flour and bread have been the subject of much discussion, but comparatively little attention has been given to other prepared cereal foods Many of the prepared cereal foods now on the market have been processed in order to improve flavor and palatability with the consequence that some nutritional value is lost Some of the manufacturers have undertaken the restoration of the vitamin content to that of the whole grain cereals from which they are made Since the individual whole grains vary in their vitamin content, and since the vitamin content of enriched cereals is generally labeled in terms of the minimum daily human requirement, it is often difficult for the physician to compare one cereal product with another As an aid to persons interested in the nutritive value of these products and as a guide to manufacturers, the Council on Foods and Nutrition has attempted to obtain some factual information about the amounts of thiamine, riboflavin and niacin in readily obtainable products

For the purposes of this preliminary report no attempt has been made to obtain a complete assortment of all the available products The products which have been examined were purchased at local markets in the spring and early summer of 1943 It is important to point out that only a limited number of analyses have been made on each product, and hence the values presented may not be typical and, as the investigation proceeds, certain revisions may have to be made It is hoped, however, that the figures presented in the table for thiamine, riboflavin and niacin may be of some value to those dealing with this problem The thiamine was determined by the thiochrome method<sup>1</sup> and the riboflavin and niacin by microbiologic procedures<sup>2</sup> In order to compare the results for the prepared products with the vitamin content of the original whole grains, values for the latter compiled by the Food and Nutrition Board of the National Research Council are included Those cereals which have been enriched either with natural material or with the synthetic vitamins have been indicated in the table

From the Department of Biochemistry, College of Agriculture, University of Wisconsin.

Published with the approval of the director of the Wisconsin Agricultural Experiment Station, University of Wisconsin Madison

1 Hennessy, D The Determination of Thiamine in Cereal Products Cereal Chemist Bull 2, 1942

2 Strong F M and Carpenter, L E Preparation of Samples for the Microbiological Determination of Riboflavin, Indust & Engin Chem (Anal) 14 909, 1942 Krehl W A Strong F M and Elvehjem, C A Determination of Nicotinic Acid ibid 17: 471 1943

## Vitamin Content of Whole Grains

(Data Compiled by the Food and Nutrition Board, National Research Council)

Product	Thiamine (Expressed as Mg per 100 Gm)	Riboflavin	Niacin
Wheat, whole	0.44 to 0.60	0.09 to 0.20	5.4 to 8.0
Corn whole	0.37 to 0.58	0.08 to 0.24	1.7 to 2.7
Oats	0.60 to 0.88	0.12 to 0.17	0.88 to 1.70
Rice	0.33 to 0.60	0.08 to 0.25	4.4 to 6.0

## Vitamin Content of Certain Prepared Cereal Foods

Products Derived Largely from Wheat	Manufacturer	Thiamine	Riboflavin	Niacin
All-Bran	Kellogg Company	0.52	0.48	17.5
Post's Bran Flakes *	General Foods Corporation	0.53*	0.39	8.0
Breakfast Wheat	H. J. Heinz Company	0.03	0.08	2.9
Coco Wheats *	Little Crow Milling Company	0.48*	0.07	2.3*
Cream of Wheat	Cream of Wheat Corporation	0.07	0.05	0.77
Cream of Wheat *	Cream of Wheat Corporation	0.41*	0.00	1.6
Farina	The Quaker Oats Company	0.00	0.06	0.82
Farina *	Pillsbury Flour Mills Company	0.37*	0.05	2.1*
Grape Nut Flakes *	General Foods Corporation	0.02*	0.20	4.9
Grape Nut Wheat Meal *	General Foods Corporation	1.00*	0.12	11.0
Post Grape Nuts *	General Foods Corporation	0.84*	0.20	4.0
Krumbles	Kellogg Company	0.07	0.21	4.0
Krusty Bran †	Battle Creek Food Company	0.40	0.20	14.3
Maltex Cereal	The Maltex Company Inc	0.32	0.13	4.0
Malt-O-Meal	Campbell Cereal Company	0.07	0.06	1.4
Monarch Food of Wheat	Reid Murdoch and Company	0.05	0.05	0.91
Muffets	The Quaker Oats Company	0.74	0.10	4.0
Pep *	Kellogg Company	1.50*	0.25	6.5
Puffed Wheat Sparkles *	The Quaker Oats Company	0.54*	0.18	7.9*
Ralston Instant Whole Wheat Cereal †	Ralston Purina Company	0.43	0.16	5.5
Ralston Whole Wheat Cereal †	Ralston Purina Company	0.07	0.14	5.1
Rolls Wheat (Pettifjohns)	The Quaker Oats Company	0.31	0.18	3.6
Shredded Ralston	Ralston Purina Company	0.16	0.12	4.5
Shredded Wheat	Kellogg Company	0.23	0.10	4.5
Shredded Wheat	National Biscuit Company	0.24	0.15	4.3
Shreddies	National Biscuit Company	0.20	0.11	4.3
Sturdwheat †	Sturdwheat Company	0.58	0.17	3.8
Toasted Wheat	Doughboy Mills Company		0.13	6.2
Wheatena..	Wheatena Corporation	0.13	0.15	4.0
Wheat Flakes	Miller Cereal Mills	0.08	0.12	4.2
Wheaties *	General Mills Inc	0.00*	0.22*	4.1
Wheat Krispies	Kellogg Company	0.13	0.18	4.1
Wheat Puffs	Thuringer Macaroni Company		0.11	6.3
Wheatworth Cereal	National Biscuit Company	0.46	0.12	5.0
Products Derived Largely from Corn				
Corn Flakes	Kellogg Company	0.45	0.07	1.6
Corn Flakes	General Foods Corporation	0.40	0.10	1.2
Corn Meal, yellow	The Quaker Oats Company	0.10	0.00	0.90
Kix †	General Mills Inc.	0.44*	0.20*	2.1
Products Derived Largely from Oats				
Cheerios *	General Mills Inc	0.80*	0.20*	1.6*
Instant Oatmeal *	Harold H. Clapp Inc	1.06*	0.32	2.0
Quaker Oatles *	The Quaker Oats Company	0.90*	0.11	0.60
Quick Quaker Oats	The Quaker Oats Company	0.08	0.14	1.0
Ralston Instant Oatmeal	Ralston Purina Company	0.03	0.14	1.0
Strained Oatmeal *	Gerber Products Company	1.00*	0.29	2.2
Products Derived Largely from Rice				
Puffed Rice Sparkles *	The Quaker Oats Company	1.50*	0.07	1.2
Rice Krispies	Kellogg Company	0.40	0.07	8.0
Rice Krispies	H. J. Heinz Company	0.13	0.18	4.0
Wilds O Rice	Pophitt Cereal Company	0.01	0.03	0.82
Products Not Otherwise Classified				
Bran and Fig †	Battle Creek Food Company	0.44	0.27	12.5
Cereal Food	H. J. Heinz Company	1.2*	0.4	2.5
Cereal Food	Gerber Products Company	1.50	0.37	5.0
Cereal Food ..	Harold H. Clapp Inc	1.03*	0.36	5.4
Crackles	The Quaker Oats Company	0.03	0.05	1.0
Little Kernels	The Quaker Oats Company	0.05	0.03	0.53
Pablum	Mead Johnson and Company	1.20	0.35	2.6
Wheat Germ	Elam Mills Inc	1.80	0.68	0.2
Zo (ready to eat)	Battle Creek Food Company	0.20	0.17	4.2

\* Enriched with synthetic vitamins or vitamin concentrates † Enriched with wheat germ

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 4, 1943

## THE MODES OF SPREAD OF INFANTILE PARALYSIS

At the conference of the Federation of Sewage Works Associations in Chicago in October Maxcy and Howe<sup>1</sup> reviewed the significance of the occasional presence in sewage of the virus of infantile paralysis. The demonstration of the virus in the stools of patients and of carriers has been supplemented by the finding of the virus several times in urban sewage in periods of maximal incidence of the disease. This observation at once raised the question whether the virus in sewage can make its way into water supplies for drinking and for swimming pools and thus perhaps spread the disease. Maxcy and Howe point out that the virus can live only a short time in sewage so far as known now and that there is no likelihood of its surviving the passage through water purification plants. There is no evidence at hand that the virus can live on or multiply in water. Maxcy and Howe stressed the fact that infantile paralysis does not behave like a water borne disease. It has not been "correlated with poor water supplies nor have explosive outbreaks of widely scattered cases appeared in cities with municipal water systems," which would be expected to occur if virulent virus was disseminated in the water mains. Cities with water supplies remote from human abodes suffer from infantile paralysis as frequently as cities whose water comes from sewage polluted sources. Indeed, the epidemic spread of the disease has been quite independent of common water supplies. There is no record of any explosive outbreak of infantile paralysis attributable "to simultaneous exposure of a group of people to a common source of water." Consequently it seems safe to conclude that the presence under certain circumstances of the virus of infantile paralysis in sewage is without significance as far as the general spread of the disease is concerned.

1 Maxcy, K. F., and Howe, H. A. The Significance of the Finding of the Virus of Infantile Paralysis in Sewage. A Review, Sewage Works Journal, to be published.

Maxcy and Howe consider also the transmission of infantile paralysis by flies and by personal contact. The virus has been demonstrated in flies in epidemic areas, but flies are not invariably associated with the disease and the disease would not "attack children preponderantly, as is the case, were it transmitted primarily by the fly or any other insect." How about the patient himself and the carrier as sources of infectious virus? In both the virus is present in the stools, the secretions and the walls of the pharynx, hence it can pass to other persons by means of fecal contamination of the hands, food, milk and other objects as well as by droplets of pharyngeal mucus.

Present knowledge points to contact infection as the most important means of spreading infantile paralysis. This being the case, everything in human power must be done to prevent contact infection. Unquestionably there is need now for closer isolation than has been carried out in the past. The discovery of practical methods for detection of the virus and for determination of infectiousness on the part of the patient and of potential carriers is a task for the future, not to mention the possibility of finding means to hasten the destruction of the virus in the human body.

## HYPOTHERMIA IN EXPERIMENTAL INFECTIONS

Prolonged artificial reduction of body temperature to levels 10 to 15 degrees below normal was suggested as a method of treatment for incurable cancer.<sup>1</sup> This suggestion renewed clinical interest in the physiologic effects of hypothermia, particularly in its effects on antimicrobial resistance. The earlier tests of the effects of chilling on natural and acquired immunity<sup>2</sup> are inconclusive because of the relatively small reduction of body temperature then studied and the relatively short duration of the hypothermia. Hardy and his colleagues<sup>3</sup> of Cornell University Medical College have therefore tried to produce hypothermia in laboratory animals of the same severity and duration as that suggested in cancer therapy.

By giving rabbits a massive intraperitoneal dose of sodium pentobarbital and then placing them in a special refrigerator the rectal temperature could be lowered to 88 to 91 F for as long as ninety-six hours without lethal effects. Guinea pigs would tolerate the same degree of hypothermia for periods as long as twenty-four hours. Two twenty-four hour periods of hypothermia per week were well borne by these animals.

Applying this technique, Duerschner and her colleagues<sup>4</sup> studied the effect of biweekly twenty-four hour

1 Smith, L. W., and Fay, Temple. Temporary Factors in Cancer and Embryonal Cell Growth, J. A. M. A. 113: 653 (Aug. 19) 1939.  
2 Foord, A. G. J. Infect. Dis. 23: 159 (Aug.) 1918.  
3 Hardy, James D., Duerschner, Dorothy Rhoades, and Muschenheim, Carl. Hypothermia in Experimental Infections. I. Preliminary Observations on Tolerance of Guinea Pigs and Rabbits to Induced Hypothermia. J. Infect. Dis. 72: 179 (May/June) 1943.  
4 Duerschner, Dorothy R., Muschenheim, Carl, and Hardy, J. D. Hypothermia in Experimental Infections. II. The Effect of Hypothermia on Tuberculin Sensitivity in Guinea Pigs. *ibid.* p. 183.



periods of hypothermia on the course of experimental tuberculosis in guinea pigs. Sixty guinea pigs weighing 300 to 500 Gm were infected subcutaneously with virulent human tubercle bacilli. Beginning the day after inoculation, a group of 20 of the infected guinea pigs were subjected twice weekly to a twenty-four hour period of hypothermia for a period of six weeks. Twenty drug controls were given equivalent amounts of sodium pentobarbital but were not subjected to chilling. The remaining 20 animals were maintained as untreated normal controls. At the conclusion of six weeks all surviving animals were maintained under standard conditions until they succumbed from tuberculosis.

Significant differences were not observed in the survival time in the three groups or in the amount and distribution of the tuberculous lesions in the various organs as found at necropsy. The development of tuberculin sensitivity of the skin however, differed in the hypothermic groups. Practically all animals of the two control groups developed 4 plus skin sensitivity to routine tuberculin tests on or before the fifth week. In the hypothermic group little or no skin sensitivity was noted at this time. The difference was equally pronounced at the end of seven weeks. A month or more later, however, after the hypothermia had been discontinued, the tuberculin reactions became equally intense in all three groups. Repeated biweekly reduction of body temperature to levels from 7 to 14 degrees F below normal of twenty-four hour duration over a period of six weeks thus did not have either beneficial or injurious effects on experimental tuberculosis in guinea pigs except in delaying the development of skin allergy.

Muschenheim and his associates<sup>5</sup> have applied the same technic to a study of the effects of continuous hypothermia (ninety-six hours) on experimental pneumococcal infections in rabbits. Their most striking results were obtained with rabbits inoculated intradermally with relatively avirulent type III pneumococcus. This strain is nonlethal under ordinary conditions even in high dosage. The induced hypothermia inhibited or reduced the local dermal inflammatory reaction but usually resulted in an overwhelming bacteremia and death. It thus changed a normally nonlethal to a lethal pneumococcal infection. Local chilling of the skin at the site of the inoculation also inhibited the local dermal inflammatory reaction but did not cause fatal bacteremia. The change of a nonlethal to a lethal pneumococcal infection was seen also in intravenously injected rabbits. There was no depression of leukocyte count and no evidence of impaired phagocytic function to account for these results. Alterations in circulating antibodies have not yet been reported.

<sup>5</sup> Muschenheim, Carl, Duerschner, Dorothy R., Hardy, J. D., and Stoll, Alice M. Hypothermia in Experimental Infections. III. The Effect of Hypothermia on Resistance to Experimental Pneumococcus Infection. *J. Infect. Dis.* 72: 187 (May/June) 1943.

## Current Comment

### THE METRIC SYSTEM

Attention is called to the announcement elsewhere in this issue (p. 900) that future editions of *New and Nonofficial Remedies*, *Useful Drugs*, the *Epitome of the U. S. Pharmacopeia and National Formulary and Interns' Manual* (with the consent of the Council on Medical Education and Hospitals) as well as other Council publications, will give quantities and dosages exclusively in the metric system. This step is in harmony with the growing and current practice of prescribing vitamins, hormones and sulfonamide preparations. The Council's concise historical presentation of the units of measure formerly in common use emphasizes the value of adopting a uniform method of presenting quantities and dosages. While daily living may have been governed for many years by grains and barley corns, the king's nose and regal thumb, and the combined length of the left feet of "sixteen men who lined up heel to toe as they left church on a Sunday morning," workers in the exact sciences appreciate the value of the simplicity, convenience and precision of the metric system. Universal adoption of this system will be a manifestation of rationality and of interprofessional and international cooperation of great practical utility.

### NEUROPSYCHIATRY IN THE ARMED FORCES

A soldier suffering from what would ordinarily be called a nervous breakdown, a condition classified as a neuropsychiatric disorder, was punished quite unnecessarily by a general. This incident serves to focus attention again on the exceeding importance of proper organization of neuropsychiatry in the medical services so that the most possible can be done to prevent situations of this type in the future. With the beginning of the Selective Service examinations the importance of preliminary neuropsychiatric study became clear. Just recently the Selective Service Administration has improved its technic for this purpose. Originally it was contemplated that great numbers of neuropsychiatrists would be associated with the examinations of men for military service especially on the induction boards and that sufficient time would be allowed for such study. The speed of recruitment and the lack of sufficient personnel, as well as the failure to develop dependable technics, combined to prevent the type of study that needs to be made if any considerable number of potential cases is to be eliminated from admission to the service. Up to April 1943 almost half a million men had been rejected for psychiatric reasons. About one third of all casualties now being returned from overseas are neuropsychiatric. The strain of this war affects leaders with the added stress of leadership, even more than it does the men in subordinate rank. Already it is clear that constant attendance by qualified neuropsychiatrists may serve to detect potential breakdown among aviators and to restore men in such condition to active service.

far more quickly than would otherwise be the case. The death of Col Roy Halloran deprives the division of neuropsychiatry of the Medical Department of the Army of a distinguished leader who was well on the way to the development of adequate personnel and improved services. A successor has not yet been appointed. Since neuropsychiatric breakdown now constitutes a leading cause of disability, resulting in the loss of services of tremendous numbers of men both in the Army and in the Navy, the Secretaries of War and of Navy might well consider whether neuropsychiatry should be a major division in the organization of the administration of the Medical Departments of the Army, the Navy and the Air Forces.

### THE CHILD WITH THE CLEFT PALATE

The Department of Speech and the Institute for Human Adjustment of the University of Michigan has issued a booklet for parents on the subject of cleft palate. The aim of the booklet is to aid parents in acquiring an accurate and sensible understanding of the problems involved and to guide them in solving these problems. The nature of the anomaly is explained and a correct attitude of the parents toward the child and toward the anomaly is suggested. The first preventive measure is to feed the baby with the bottle and nipple so that he can have exercise in sucking and swallowing. The lip defect is to be repaired preferably during the first month by a surgeon who specializes in oral surgery. As soon as the baby reaches the age at which children usually start to chew, he should be taught to chew on solid food. These chewing activities are the muscle movements out of which speech develops. A baby with cleft palate should be encouraged to coo and to babble. The operation on the palate should be performed sometimes between the eighteenth and the twenty-fourth month. When the palate has been repaired, the first problem is to train the soft palate to function. The best plan to follow at this time is for the parents to consult a speech clinic. The booklet contains a number of practical suggestions for the parents, with illustrations. The contents of the brief booklet are well calculated to create a hopeful attitude in parents and to indicate the program which, if followed, will go a long way toward alleviating the drawbacks of the anomaly.

### NEWSPAPER ADVERTISING OF PROPRIETARY MEDICINES

The better newspapers in this country for years have attempted to exclude the more blatant advertisements of proprietary remedies. A few—too few—have even banned advertising of this class altogether. In Britain, where the situation with regard to extravagant claims has been generally much worse than here, a long step forward has just been taken. As told elsewhere in this issue (p 920), London newspapers, through their trade association, voluntarily have adopted regulations which should greatly improve the standard of control over such advertising claims. In this country too the time seems ripe for more positive voluntary action by

publishers to avoid the danger of control from above by decree, as in Argentina (p 921), where almost complete government control of drugs and drug advertising has been established.

### CONGENITAL BILATERAL ANOPHTHALMOS

Genuine anophthalmos as distinguished from an extreme degree of microphthalmos is rare. From the point of view of embryologic development three types may be distinguished: (1) that due to failure of the optic pit to deepen and to form an outgrowth from the forebrain, (2) that due to complete suppression or an abnormality of the whole of the forebrain and (3) that due to degeneration of an optic vesicle that has formed and its later disappearance. Experimental studies and clinical observations suggest that this maldevelopment occurs as a result of some unfavorable environmental change early in pregnancy and is not of germinal origin. Hare<sup>1</sup> reports 2 instances of congenital bilateral anophthalmos. One of the 2 boys thus afflicted was fitted with prostheses. Hare points out that a child whose appearance is improved by artificial eyes is more acceptable to his parents, relatives and future associates than is one who is disfigured. This, in turn, tends to diminish the emotional trauma to his parents and makes the patient better equipped emotionally to face life. The histories of his 2 little patients also demonstrate the need of placing a child with bilateral anophthalmos under the care of a trained worker.

### ETIOLOGIC RESEARCH ON REGIONAL ENTERITIS

Morphologically regional enteritis is an infectious granulomatous process. Heretofore all efforts to discover a causative agent have failed. Staining and cultural methods, animal experiments and immunologic tests have yielded uniformly negative results. With the increase in the knowledge and understanding of venereal lymphogranuloma, which may invade rectal and other abdominal structures, the question has arisen whether regional enteritis may not be caused by the lymphogranulomatous virus, but so far the Frei intracutaneous tests of patients with regional enteritis have not been positive.<sup>1</sup> Rodaniche, Kirsner and Palmer<sup>2</sup> failed also in neutralization tests of the lymphogranulomatous virus with the serum of enteritis patients and in attempts to isolate the virus from resected intestinal segments and mesenteric lymph nodes in regional enteritis. It appears that regional enteritis as ordinarily understood is not caused by the virus of lymphogranuloma. It is of interest that in the reports of these and other cases of regional enteritis there is no mention of any history of typical clinical venereal lymphogranuloma. Regional enteritis shares with Hodgkin's disease the distinction of successfully resisting the search for a specific causative agent.

1 Hare, Robert. Congenital Bilateral Anophthalmos. *Arch. Ophthalmol.* 30: 320 (Sept.) 1943.

1 Koster, Harry, Kasman, I. P. and Scheinfeld, William. Regional Ileitis. *Arch. Surg.* 32: 789 (May) 1935. Stafford, F. S. Regional Ileitis and Ulcerative Colitis. *Bull. Johns Hopkins Hosp.* 6: 399 (April) 1938.

2 Rodaniche, Enid C., Kirsner, J. B., and Palmer, W. I. The Relationship Between Lymphogranuloma Venereum and Regional Enteritis: An Etiologic Study of 4 Cases with Negative Results. *Gastroenterology* 1: 687 (July) 1943.

# MEDICINE AND THE WAR

In this section of *The Journal* each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession

## ARMY

### AVIATION MEDICAL EXAMINERS

Graduation exercises were held on October 27 for aviation medical examiners following the course on aviation medicine, which is now given in its entirety at the School of Aviation Medicine, Randolph Field, Texas. This is the first class to complete this changed program, which began on August 26. The list of students graduating follows:

**ALABAMA**  
Luther L. Hill Major Montgomery  
James F. Trucks 1st Lieut. Birmingham

**ARIZONA**  
Carlos C. Craig Captain Phoenix  
Robert M. McLennan 1st Lieut. Phoenix

**ARKANSAS**  
Jones W. Lamb Captain Paragould  
Waldo A. Regnier Captain, Crossett  
Euchid M. Smith Major, Hot Springs National Park

**CALIFORNIA**  
Robert T. Gardner Jr., 1st Lieut., Chula Vista  
Ralph G. Gladen Captain Patton  
George E. Hall Captain Los Angeles  
Martrice J. Honlien, Captain, Eureka  
Clinton B. H. Hollister Captain, Santa Barbara  
Cecil C. Hunnicutt, Captain Montebello  
George Q. Lee 1st Lieut., Oakland  
Grant V. Lund Captain, Glendale  
Douglas F. McDowell 1st Lieut., Santa Barbara  
Wallace B. Parkinson Captain, Porterville  
Delbert F. Rey 1st Lieut. Glendale  
Emmett I. Schield Major Pomona  
Hume A. Thomason, 1st Lieut. Santa Monica  
Frank Elwood Tufts Major, Sacramento  
H. Clyde Washburn 1st Lieut., El Monte  
Richard F. Webb Captain Pasadena  
Thomas S. Whitelock Captain San Diego  
Richard A. Young Major Oakland

**COLORADO**  
Harry A. Alexander, Major Boulder

**CONNECTICUT**  
Harold A. Bergendahl Captain, Taftville  
John H. Gilbert 1st Lieut. Stamford

**DISTRICT OF COLUMBIA**  
Clifton D. Howe Captain Washington  
Francis L. Zinzi 1st Lieut. Washington

**FLORIDA**  
Noel C. Mellen 1st Lieut. Pensacola  
Jack O. W. Rash Captain Miami

**GEORGIA**  
Harry M. Kandel Major Savannah

Robert D. McKenzie Captain Albany  
John T. Norvell Jr., 1st Lieut., Augusta  
C. James Roper, 1st Lieut., Jasper

**ILLINOIS**  
Maurice Blinski 1st Lieut. Chicago  
Clarence H. Boswell, Lieut. Col., Rockford  
Charles G. Freundlich 1st Lieut., Chicago  
Carl N. Graf Captain Chicago  
Mervin W. Greenberg 1st Lieut., Chicago  
Alexander J. Jones Captain, Springfield  
Francis H. Ketterer Major Breese  
Robert J. McKeever, 1st Lieut., Chicago  
Arnold H. Maloney Jr. 1st Lieut., Stockton  
John R. Pfeffer 1st Lieut. Chicago  
Carl M. Pohl Jr. 1st Lieut. Chicago  
Lewis R. Pnmmer 1st Lieut. Chicago  
Morton H. Rose 1st Lieut. Chicago  
Michael Schubert 1st Lieut., Toluca  
William F. Seifert Captain Rockford  
Burton J. Soboroff, 1st Lieut., Chicago  
Roger A. VanAtta 1st Lieut. Chicago  
Robert E. Williams Major Chicago

**INDIANA**  
Alfred J. Dainko Captain East Chicago  
Dillon D. Geiger Major Bloomington  
George W. Herrold Captain Lafayette  
Loren H. Martin Captain Indianapolis  
Robert B. Smallwood Captain Bedford  
Ira C. Whitehead 1st Lieut. Terre Haute

**IOWA**  
Jerome C. Burke 1st Lieut. Clinton  
Edwin A. Crowell Jr., Captain Iowa City  
Francis C. Dunn Captain Cedar Rapids  
Martin J. Ryan Captain, Sioux City

**KANSAS**  
Robert C. Anderson 1st Lieut., Topeka  
Carl T. Buehler Jr. 1st Lieut. Halstead  
Paul E. Craig Captain Coffeyville  
Oliver L. Martin 1st Lieut. Baxter Springs  
George E. Stafford Captain Salina  
Ralph W. Wyatt 1st Lieut. Hialeah

### KENTUCKY

Richard W. Oliver, Captain, Louisville  
Ernest C. Strode, Captain, Louisville

### LOUISIANA

Frank H. Davis Captain Lafayette

### MAINE

Allan J. Stinchfield, Captain Skowhegan

### MARYLAND

William K. Allen, 1st Lieut., Baltimore  
Marshall P. Byerly, Captain Baltimore  
Emmett L. Jones Jr., Major, Cumberland  
William H. Morrison Captain Baltimore

### MASSACHUSETTS

Frank L. Armstrong, 1st Lieut. Boston  
Cornelius E. Hagen Jr. Captain Fall River  
Nelson Newmark Captain Springfield  
Cyril P. Rosston, Captain, North Adams  
Carl A. Weiss Captain, Lawrence

### MICHIGAN

David W. Davis 1st Lieut. Pontiac  
Myron Fink Captain Ann Arbor  
Wilfred S. Ley 1st Lieut. Lansing  
William S. Lovas 1st Lieut. Detroit  
John R. Lukas Major Dearborn  
Frederick P. Maibauer Captain Wyandotte  
Donald B. Morrison Captain, Tekonsha  
David G. Morton Captain Detroit

### MINNESOTA

Fabian J. McCaffrey, 1st Lieut., Minneapolis  
Horace D. McGee 1st Lieut. St. Paul  
Melvin E. Lenander Captain St. Peter  
Theodore W. Stransky Captain Owatonna  
William F. Vandewell, 1st Lieut. Duluth

### MISSISSIPPI

William O. Biggs, Captain Osyka  
Santo T. Coppola Captain, Jackson

### MISSOURI

Alfred J. Cone Major St. Louis  
Joseph H. Delaney Captain Columbia  
George E. Moore Major Fulton  
Darwin W. Neubauer Captain St. Louis

### NEBRASKA

Albert E. Harrington Captain Hastings  
Reynolds J. O'Donnell Captain Columbus

### NEW JERSEY

Charles I. Binder Captain Newark  
Samuel Edelson, Captain Neptune  
Ferdinand K. Engelhart, Captain Trenton  
John J. Hamley Captain Newark

Stuart Z. Hawkes Major Newark  
Charles Lipshutz Captain, Bayonne  
Raymond S. Megibow, 1st Lieut., West New York  
Ralph L. Moore 1st Lieut. Woodbury  
Peter W. Ross Captain Passaic  
Josiah K. Wallis, 1st Lieut., Princeton

### NEW MEXICO

Robert H. Greeley, 1st Lieut., Deming  
Carroll L. Womack, Major Alamogordo

### NEW YORK

Willard F. Ande 1st Lieut. Brooklyn  
Melvyn Berlind Major Brooklyn  
Chester B. Bland 1st Lieut. New York  
Charles P. Catalano, 1st Lieut. New York  
William Chester Major Mamaroneck  
Robert T. Curley Captain Brooklyn  
Nicholas F. Fiegoli Captain New York  
Charles T. Fried Captain New York  
Edward L. Glynn Captain Richmond Hill  
Sylvan A. Hertz Captain New York  
Nathan Hilfer 1st Lieut. Long Island City  
Nathan B. Ludwig Captain Brooklyn  
Louis A. Maglio Captain New York  
William S. Maurer, Captain New York  
Albert H. Meyer, Captain Brooklyn  
Albertus W. Rappole, Captain Jamestown  
Louis Razinsky Captain, Far Rockaway  
Louis E. Rosiello Captain Amsterdam  
George Y. Smith Captain Brooklyn  
Bernard P. Soehner Major Rochester  
Aaron Stein 1st Lieut. Bellerose  
Herman Tarnower, Captain Scarsdale  
Lester A. Wall Jr. Captain, Valhalla  
Gay M. Walters Captain Willard  
Edward C. Wood Major White Plains

### NORTH CAROLINA

William H. Kaufman Captain, Hope Valley

### OHIO

Edwin H. Artman 1st Lieut. Chillicothe  
William W. Cornwin Captain Galton  
Philip B. Demaine 1st Lieut. Akron  
Benjamin S. Gillespie Captain Barnesville  
Donald C. Nellins 1st Lieut. Cleveland  
Ervin S. Ross Major Cincinnati  
Joseph R. Schaner Captain Dayton

Lester L. Williams, 1st Lieut.,  
Mount Vernon

#### OKLAHOMA

Elder D. Padberg, 1st Lieut., Ada  
Ernest R. Vahlberg, Major, Okla-  
homa City

#### OREGON

Albert B. Baker, Major, Stanfield  
William W. Baum, Major, Salem  
Marvin J. Robb, 1st Lieut., Bend

#### PENNSYLVANIA

Joseph A. Balin, Captain, Phila-  
delphia  
William P. Bradley Jr., Captain,  
Sewickley

Joseph M. Bratt, 1st Lieut., Easton  
Paul Budura, 1st Lieut., Bethlehem  
Joseph E. Forman, 1st Lieut.,  
Philadelphia

Richard H. Gollings, 1st Lieut.,  
Pittsburgh

Joseph L. Hunsberger, 1st Lieut.,  
Norristown

Walter Klein, 1st Lieut., Pitts-  
burgh

Marion L. Konecke, Captain,  
Wilkes Barre

Louis Koolpe, 1st Lieut., Philadel-  
phia

William F. Lambert, Captain,  
Scranton

Daniel H. Mann, Major, Bradford  
Edward A. Miller, 1st Lieut.,  
Gettysburg

Joseph W. Milhron, 1st Lieut.,  
Harrisburg

Joe G. Reed, 1st Lieut., Sayre  
Stouffton R. Vogel, Captain, Phila-  
delphia

#### SOUTH CAROLINA

John M. Davis, Major, Columbia

#### TENNESSEE

Hamilton V. Gayden, Major, Nash-  
ville

#### TEXAS

Bernard H. Bloom, Captain, San  
Antonio

Wilfred P. Boun, Captain, Hous-  
ton

John J. Delany, 1st Lieut., Galves-  
ton

Guy T. Denton Jr., Captain, Dallas  
Francis C. Goodman, Major, El  
Paso

Harold B. Griffin, 1st Lieut., Sana-  
torium

Abe Hauser, Major, Houston

James E. Loveless, 1st Lieut.,  
Slaton

Robert A. McCall, Captain, San  
Antonio

Charles O. Moody, Captain, Cole-  
man

A. William Multhaupt, Major, El  
Paso

Theodore S. Wittels, Captain, New  
ton

#### UTAH

Junior E. Rich, Major, Ogden

#### WASHINGTON

John T. Abraham, Captain,  
Wenatchee

Carroll C. Carlson, Captain,  
Tacoma

Harold J. Gunderson, Captain,  
Everett

Norman E. Marsh, Captain, Che-  
halis

Walter E. Nawrocki, 1st Lieut.,  
Cle Elum

Joseph H. Whitmore, 1st Lieut.,  
Spokane

#### WEST VIRGINIA

Anthony A. Yurko, Captain, Holl-  
days Cove

#### WISCONSIN

Marcellus C. Hynes, Captain, Osh-  
kosh

John B. Hitz, Major, Milwaukee

Francis C. Johnson, 1st Lieut.,  
Madison

Harvey G. Mallow, 1st Lieut.,  
Watertown

John H. Rendek, Captain, Madison

### MAJOR JAY PAUL ROLLER AWARDED SILVER STAR

Major Jay Paul Roller, formerly of Luckey, Ohio, was recently awarded the Silver Star for gallantry in action in Tunisia. The citation accompanying the award was as follows: "For gallantry in action. On the 11 April 1943, at about 1900 hours, Capt Jay P. Roller organized and personally led four ambulances under heavy artillery and small arm fire to evacuate patients. On the 11 April 1943, in the 11 sector, Tunisia, he personally led litter squads to the actual battle field and personally supervised evacuation of wounded to the collecting company. This greatly expedited the proper treatment of the wounded. This was definitely above and beyond his line of duty, which does not call for him to go as far as the actual battle field. While returning he saw other groups of litter bearers who were from an entirely different unit and under fire for the first time scattering in panic. Without regard to his personal safety and in spite of the vast number of shells and mortar fire exploding all around him, he reorganized these men, leading them to safety without injury to a single man."

Dr. Roller graduated from the University of Louisville School of Medicine in 1939 and entered the service Jan 5, 1941

### ARMY'S FIRST OVERSEAS TYPE HOSPITAL TRAIN

The War Department announced recently that the Army's first overseas type hospital train, built specifically for use in theaters of operations, will be used temporarily for training purposes at the California-Arizona Maneuver Area (formerly the Desert Training Center). The new traveling hospital unit, of all steel construction, has been designated the Third Hospital Train. It consists of ten cars, including six ward cars, a kitchen car, utilities car and two personnel cars for officers and enlisted men. Each of the cars is slightly more than half

the length of ordinary railroad cars and was designed purposely to negotiate the sharp curves, narrow bridges and tunnels of foreign railways. The train is olive drab and displays all hospital and Red Cross markings in accordance with Geneva Convention agreements. The train also includes a pressure ventilating system, complete sterilization units, and emergency operating areas in each ward car. Personnel of the train includes four medical officers, six army nurses and thirty-three enlisted men, most of whom are technical specialists trained in medical work. Quarters for train personnel have been provided in two cars. Major Thomas Purser Jr. of McComb, Miss., is commanding officer of the train, and 1st Lieut. Serene Berg of Stoneham, Mass., is chief nurse.

### GRADUATE MEDICAL ADMINISTRATIVE OFFICERS

The twenty-sixth class of the Camp Berkeley Medical Administrative Corps Officer Candidate School graduated November 17 following a sixteen weeks course of training. Since the organization of the Medical Administrative Corps their duties have been expanded to take over more and more of the nonmedical functions of the medical department. Among the varied positions now handled by the Medical Administrative Corps are litter bearer platoon leaders, motor maintenance officers, assistant registrars of large hospitals, supply and mess officers for all types of medical units, personnel adjutants and company commanders of training units. The graduation address was delivered by Dr. Rupert N. Richardson, president of the Hardin-Simmons University, Abilene, Texas. Certificates of graduation and letters of commission were presented to the new officers by Brig. Gen. Roy C. Heflebower, school commandant.

### SUPERINTENDENT NAMED FOR OCCUPATIONAL THERAPY

Mrs. Winifred C. Kahmann, director of occupational therapy and physical therapy at the Indiana University Medical Center, Indianapolis-Bloomington, has been appointed superintendent of the new occupational therapy program of the Surgeon General's Office of the Army. Mrs. Kahmann has been associated with the medical center since 1926, first as director of occupational therapy of Riley Hospital and later supervising that field of work for the entire medical center. She was granted a leave of absence by the university to start her new activities in Washington, November 17. Mrs. Kahmann will work as an assistant to Major Walter E. Barton, M. C., A. U. S., formerly engaged in neuropsychiatric work in the Army, who has been placed in charge of the reconditioning division in the Surgeon General's Office.

### NURSE ENDS LONG PERIOD OF SERVICE

On November 12 Lieut. Col. Lyda M. Keener, A. N. C., principal chief nurse at the Walter Reed General Hospital, Washington, D. C., retired to end the longest period of service in the history of the Army Nurse Corps. Colonel Keener had completed thirty-seven years and five months of duty with the corps. She was born in Greensburg, Pa., and graduated at the McKeesport General Hospital in September 1905. She entered the Army Nurse Corps in June 1906. The letter assigning her to her first station, San Francisco, was signed by Dr. H. Kinney, first superintendent of the corps. Capt. Gertrude Thomson, A. N. C., Lovell General Hospital, Fort Devens, Mass., has been assigned to Walter Reed General Hospital to succeed Colonel Keener.

### ARMY CAMP IN NEW ZEALAND NAMED AFTER DR. CLAUDE E. HALE

The War Department recently informed the wife of Capt. Claude E. Hale Jr., who met his death as a result of a motor vehicle accident on Nov. 5, 1942 in New Zealand, where he was serving in the medical corps, that the United States Army camp located at Auckland Domain, Auckland, North Island, New Zealand, has been named Camp Hale in honor of her husband. Dr. Hale graduated from Vanderbilt University School of Medicine in 1917 and entered the service in May 1941.

## MEETING OF MEDICAL OFFICERS

Brig Gen Fred W Rankin, formerly President of the American Medical Association and now consultant in surgery, Surgeon General's Office, addressed the monthly meeting of medical officers at the Army Medical Center, Washington, D C, October 18 on "Observations of a Recent Visit to Theaters of Operation." Col Crawford W Sams, M C, who recently returned from overseas service and is now at the Medical Field Service School, Carlisle Barracks, Pennsylvania, spoke on "Medical Experience in the Middle East."

Air Marshal Sir Harold Wittingham of England addressed the meeting extemporaneously.

## TWO ARMY NURSES KILLED WHILE ON DUTY OVERSEAS

Two army nurses from West Virginia were killed recently while on duty overseas. Lieut Louise Link of Richwood was killed in action, probably in Sicily, and Lieut Martha Thurmond of Charleston was killed in a jeep accident in North Africa. Lieutenant Link graduated from the McMillan Hospital school of nursing, Charleston, in 1941 and later served on the nursing staff at Charleston General Hospital. Lieutenant Thurmond was formerly on the nursing staff at St Francis Hospital, Charleston.

## NAVY

### JAPANESE ATTACK U S NAVAL FIELD HOSPITAL DURING OPERATION

Lieut Comdr Gordon Bruce, formerly of New York City in a recent news dispatch from Torokina Cape, Bougainville Island, described how the Japanese attacked a United States Navy field hospital on November 7 during a battle near the Koromokina River, which read as follows: "We set up our tents near the beach on the left flank. At noon marine casualties from that sector began coming in and at 1 o'clock we had 32 patients. The Japs began their attack on the hospital then. My surgeons were operating on a marine when shots ripped through the tent. I ran to the beach with a couple of corpsmen and unscrewed three machine guns from Higgins boats which were smashed in the original landings. We brought the guns back to the hospital and I drafted a few marines to operate them and set up a defense line. A sniper's bullet through the top of the tent went into the lung of a chief pharmacist's mate. We evacuated him at once. It began to rain, and water filled up our foxhole operating rooms. At 2 o'clock the firing increased and I sent a runner to ask a marine commander on the beach for help. He had only fifteen men and couldn't spare them. Then I got two marines plodding up a jungle trail to take up guard positions in the jungle 30 feet from the tent. The corpsmen piled sandbags around tents. Finally a platoon of marines came to our aid and set up a defensive position. My surgeons continued operating until 9 o'clock. Only then did we evacuate the patients, now numbering 50. Not 1 died. Once during the fighting I was told we had better evacuate, but we couldn't because some marine patients required delicate surgery for brain injuries before they could be moved. The two marines I impressed into service were found late that afternoon. They had been killed by rifle fire and stripped of everything except their pants. The Japs even took their identification tags. I feel terrible about these two boys, who were so willing to help. Our operations were performed under small battery powered lights. I can't pay enough tribute to my men. Lieut Herbert Hawley, Elwood, Neb., dentist attached to our unit, is the most completely fearless individual I ever knew."

Surgeons performing operations under fire included Lieut Comdr Raymond R Callaway, Birmingham, Ala., and Lieuts James Emert, New York City, William Peck, Falls City, Neb., Frank Adair, St Paul, and W F Barker, Corpus Christi, Texas. Helping the wounded was 1st Lieut Leo Halatek, Chicago, marine quartermaster. Dr Bruce was commander of the medical unit.

### OXYGEN THERAPY CLASSES AT U S NAVAL HOSPITAL IN SAN DIEGO

Lieut Comdr Paul L Yordy, USNR, former anesthetist at the Miami Valley Hospital, Dayton, Ohio, has been named co supervisor of oxygen therapy classes which are being held at the U S Naval Hospital, San Diego, Calif. The intensive program, the first of its kind in a military hospital, is designed to train several hundred Navy men and Waves to operate the iron lung, oxygen tents and similar pieces of apparatus and are taught to improvise their own equipment on the battlefield or aboard ship to aid doctors in the care of patients during emergencies. While war casualties have not increased the use of

the iron lung in individual military hospitals, training of operators has been deemed essential because of the opening of numerous new hospitals in widely separated areas. The oxygen tent, nasal catheters and B L B masks are used more often than ever before at naval base hospitals and in mobile hospitals on the war fronts because of the large number of operations necessitated by war injuries. They are also used during postoperative treatment to enrich the system. The San Diego hospital unit maintains a twenty-four hour watch ready to serve with oxygen apparatus.

Dr Yordy graduated from the Ohio State University College of Medicine in 1926, received his commission in March 1942 and was assigned to the Dayton Medical Specialist Unit at the San Diego Hospital under the leadership of Comdr Walter Simpson of Dayton, Ohio.

### LIEUTENANT COMMANDER BUNCH AWARDED NAVAL RESERVE MEDAL

The chief of the Bureau of Naval Personnel announced recently that Lieut. Comdr Charles Bunch (MC), USNR, formerly of Charlotte, N C, and now stationed at a naval hospital in the Caribbean area, has been awarded the Naval Reserve Medal for his long service and action in the reserve. Dr Bunch graduated from the Medical College of the State of South Carolina, Charleston, in 1931, entered the reserve as a junior grade lieutenant in 1933 and was promoted to lieutenant in 1937 and lieutenant commander in January 1942. He was on active duty before the war began and was on recruiting duty at the Charlotte and Raleigh stations. He has seen service at sea, in the Navy hospital in Washington and on the surgical staff of the navy hospital at Parris Island, S C. Dr Bunch, in addition to the new award, also holds the Defense Service medal and the America Area Campaign medal.

### PHYSICIAN HONORED

The theater in the Aleutians of the Navy's Fifty-Second Construction Battalion has been named "Connolly Hall" in honor of Lieut (jg) Henry Hill Connolly (MC), USNR, who died three days before the outfit left the United States. Dr Connolly died on January 5 of meningococcic meningitis, aged 27. The decision to name the theater, which is also used for religious services, was made by the men in a contest conducted to select the most appropriate name. The young medical officer resided in Beverly, Mass. (THE JOURNAL, July 3, p 693).

### PRISONER OF THE JAPANESE

Lieut Comdr Herbert C Brokenshire (MC), USNR, who was reported "missing in action" following the capture of Manila in 1941, was recently reported a prisoner of the Japanese at the headquarters of the military prisons of the Philippines, according to the Boston Evening Globe, September 3. Dr Brokenshire graduated from Cornell University Medical College in 1924 and since 1926 has served as a medical missionary at Davao on the island of Mindanao in the Philippines.



## MISCELLANEOUS

MAJOR GENERAL MAGEE BECOMES  
EXECUTIVE OFFICER OF INFORMATIONAL SERVICE

Prof. Ross G. Harrison, chairman of the National Research Council, has announced the appointment of Major Gen. James Carre Magee, Medical Corps, United States Army, retired, as executive officer of the Informational Service of the Council's Division of Medical Sciences. This service has been established by the National Research Council under the recent grant of the Johnson and Johnson Research Foundation, by which the sum of \$75,000 was made available to the council for the period ending June 30, 1945. The purpose of the grant was to enable the council to assemble and disseminate, as far as possible, medical information pertaining to the war effort.

General Magee has had a distinguished record in the Medical Corps of the Army. A graduate of Jefferson Medical College in 1905, he has spent his entire professional life in the medical service of the Army. He was assigned to the Philippines before the outbreak of the first world war and then recalled for European duty from 1917 to 1919. He was appointed Surgeon General of the Army in 1939, and on May 31, 1943 he was retired on completion of the four year term of duty. It was under his direction that the Medical Corps was enormously expanded to meet the demands of the present war and the program of service adopted which has led to the remarkable health record of the Army. General Magee holds the honorary degree of doctor of science from Jefferson Medical College and was recently awarded the Distinguished Service Medal for outstanding accomplishments as Surgeon General.

General Magee, on assuming his duties, will devote full time to the organization of a central office in the National Research Council which will collect medical reports and records widely dealing with military medical practice, civilian practice as affected by the war, medical education and research and the distribution of diseases. The materials collected will, so far as military necessities permit, be made available by publications, summaries and notes.

CARE OF THE WOUNDED IN  
WORLD WAR II

The Office of War Information in a recent report on the care of wounded soldiers, sailors, marines and coast guardsmen, based on information obtained from the Army and Navy medical departments, shows that the battle casualty who escapes outright death has a better chance of coming out alive in this war than he did in the last, because of the speedier and more effective treatment of their wounds. It has been estimated by the Army Medical Department that between 80 and 90 per cent of the wounded get first aid treatment within an hour of being wounded.

## FIGURES INCONCLUSIVE

The figures indicate that the ratio of killed in action to battle casualties is twice as high in this war as it was in the last, but the mortality rate among the wounded is only half as high in this war as it was in the last. Three main reasons are given: (1) the use of blood plasma to combat shock and hemorrhage, (2) the use of sulfonamide to combat infection and (3) the mobility and organization of medical services which insure prompt and efficient medical and surgical treatment.

Capt. Winchell M. Craig, chief of surgery at the Naval Medical Center, Bethesda, Md., cited a report of head wound casualties in one of the Egyptian campaigns which showed a mortality rate of only 9 per cent as against a mortality rate of between 50 and 60 per cent for head wounds in the last war. Major Gen. Albert W. Kenner, Assistant Surgeon General of the Army, credited blood plasma with saving the lives of many of the 400 American sailors who were burned when their ship was blown up 5 miles out from Casablanca. Capt. M. J. Aston of the Navy Medical Corps reported that during twenty months

he was senior medical officer of a naval hospital ship in the South Pacific, 360 burned patients were treated with a loss of only 3 lives, only 1 of them from burns alone. Treatment consisted in cleaning the wounds with soap and water, applying sulfathiazole and pressure dressings, and grafting skin over the burned areas as soon as possible. In the field of surgery, medical officers regard highly the guillotine or flapless type of amputation, which is being used widely in both branches of the service.

## MENTAL CASES

In the last war 3 per cent of the men were rejected at induction as mentally unfit for military life. In this war between 8 and 10 per cent of the men examined have been rejected at induction for the same reason. Despite this more rigid screening, the incidence of neuropsychiatric disorders has been high, particularly among combat troops. In the various overseas theaters hospital admissions for such cases have been as high as 20 to 25 per cent of hospital admissions for all causes due to combat.

The late Col. Roy D. Halloran, chief of the Neuropsychiatry Branch of the Army Medical Department, said that "Ordinarily one thinks of nervous breakdowns as occurring only in weaklings or in people who are fundamentally unstable. This is not true in warfare. Obviously, some people break down or give up sooner than others, but under the extremes of horror and fatigue of modern warfare the best and strongest among us has his breaking point at which the will to fight is lost and a nervous breakdown occurs." Fatigue, lack of food, fear, noise and the sight of wounded and dying comrades are common causes of breakdown in combat. The more these causes can be eliminated or diminished, the fewer will be the casualties from nervous breakdown. The effects of fatigue and lack of food can be best counteracted by frequent use of reserves, which, however, may not be possible in a war of movement. Colonel Halloran further said that "the soldier must be taught that fear is a normal reaction and is not the mark of a coward. It is experienced by even the bravest. It is important, however, to substitute fear of the consequences of defeat or fear of combat."

## WARTIME GRADUATE MEDICAL MEETINGS

Among the subjects scheduled for early presentation under the auspices of the Wartime Graduate Medical Meetings are the following at Camp Lee, Va.: Amputations, Upper and Lower Extremities, Dr. James T. Tucker, December 10; Fractures, Lieut. Col. Martillus H. Todd, December 17; Psychoneurosis, Maladjustment Neuropsychiatry, Dr. O. B. Darden, January 7; Dysenteries, Dr. J. A. Scherer, January 14; Newer Drugs and Their Uses in Practice, Dr. Harvey B. Haag, January 21; Diagnosis and Treatment of Contagious Disease, Dr. Harry Walker, January 28.

At Fort Eustis, Virginia: Psychoneurosis, Maladjustment Neuropsychiatry, Dr. David Cole Wilson, December 16.

At the U. S. Naval Hospital and U. S. Naval Academy Dispensary, Annapolis, Md.: Treatment of Chest Injuries, Dr. Frederick C. Fishback, December 17; Psychoneurosis Among the Armed Forces, Dr. Riley H. Guthrie, January 21; Rickettsia, Diagnosis, Treatment and Prevention (demonstrated with lantern slides), Dr. Rolla E. Dyer, February 18.

At Norfolk Naval Hospital, Portsmouth, Va.: Treatment of Fractures (Demonstrated with X-Rays), Dr. Custis Lee Hall, December 9; Diagnosis and Treatment of Gastrointestinal Infections, Dr. T. Neill Barnett, December 10.

At Camp Shanks, Orangeburg, N. Y.: Orthopedic Problems in the Soldier, Dr. J. C. McCaulley, December 23; Nephritis, Dr. A. M. Fishberg, January 13; Common Skin Diseases in Soldiers, Dr. G. C. Andrews, January 27.

At Station Hospital, Indiantown Gap, Pa.: Psychiatry, Dr. Edward Strecker, December 10.

## CIVILIAN DEFENSE

HEALTH AND MEDICAL COMMITTEES  
URGED TO ASSIST WITH WAR-  
TIME HEALTH PROBLEMS

In a pamphlet recently issued by the Office of Civilian Defense it is recommended that medical advisory councils organized in the developmental period of civilian defense as part of the Emergency Medical Service of local defense councils should merge with health and medical committees of the Civilian War Services branch of defense councils. In addition to advising the chief of Emergency Welfare Service, the committee should support the health officer and serve as a means of mobilizing community support for meeting health problems.

The purposes of the health and medical committees suggested in the pamphlet, entitled 'Health Service in Wartime,' are (1) development of adequate wartime coordinated health programs in each community and (2) the building up of citizens' understanding and participation.

Membership in the committee should include the local health officer, the local chief of Emergency Medical Service, and representatives of the local welfare and education departments, of the medical and nursing professions of organized labor and industry or farming, and of the voluntary health and social agencies, parent teacher associations and civic groups.

It is recommended that the health and medical committee of a local defense council act as a steering committee for functional subcommittees. Because health and medical problems vary greatly among communities, the pamphlet does not present a blueprint for subcommittee organization and work. It does, however, list examples of the problems that face many communities in wartime and suggests how the health and medical committee may assist in solving them. It is emphasized that the work of the health and medical committee should not duplicate or interfere with the activities of other agencies if an adequate working group has been established in any health field, it should be requested to serve as the appropriate subcommittee.

Among the suggested health and medical problems which the program of the health and medical committees of defense councils might include are communicable disease control, maternal and child health including school health programs, health of young workers and day care for children of working mothers, accident prevention, nutrition and conservation of essential foods, environmental sanitation, provision of medical and nursing care and the use of volunteers in health programs.

OFFICE OF CIVILIAN DEFENSE ISSUES  
MANUAL ON EMERGENCY CARE  
OF INJURED

The Medical Division, Office of Civilian Defense, Washington, D. C., recently issued a new manual in which is described the immediate care that can be given to injured persons at the site of a disaster and techniques of transporting them to safety and medical attention. The work is based on procedures and organization developed by the Office of Civilian Defense and careful study of three years of British and other air raid experience.

The 117 page book is divided into three parts 'Civilian Defense' 'Emergency Field Care' and 'Transportation of the Injured.' Part I describes the organization and operation of the field casualty service developed by the Medical Division which includes mobile medical teams, based on hospitals wherever possible, express parties, made up of a medical team a rescue squad, an ambulance and a car for sitting cases dispatched through the control center to a disaster for immediate action casualty stations for the care of casualties with minor injuries, stretcher teams, and ambulances.

Part II includes a discussion of the injuries and conditions most frequently encountered in wartime disaster, namely hemorrhage shock fractures burns suffocation and carbon monoxide poisoning. There are chapters on principles of bandaging with detailed illustrations marking of casualties and disposal of the dead methods of blanketing a casualty and methods of rushing a casualty to a stretcher.

Special attention is given to crush and blast injuries. Crushing wounds may result from falling masonry, girders, beams or whole floors dislodged by bomb explosions. Although these injuries may be immediately fatal, casualties often show little sign of injury when released the manual points out. Their condition may appear good for a few hours and yet they may die of kidney failure several days later. Directions for first aid are included, and workers are warned that any person "who has been trapped by debris which has pressed on any part of the body must be regarded as a serious casualty." The importance of administering by mouth abundant quantities of fluids and alkalis (sodium bicarbonate) is stressed.

Persons exposed to blast from high explosive may also suffer serious internal injury without external evidence of it. The manual urges all persons concerned with the handling of casualties to "suspect blast injuries in every person found near the site of a bomb explosion, especially those who have obviously suffered injury and yet show no external evidence of it."

More extensive discussions of these two types of injury are included in the recent OCD publication "Clinical Recognition and Treatment of Shock."

The section of the manual devoted to transportation of the injured describes regular and improvised stretchers and gives directions for stretcher bearing with a separate section on types of injury that require special care in moving. Another chapter explains methods of carrying the injured without stretchers, and the final chapter explains the ambulance service of the civilian defense organization and presents specific instructions for loading and unloading ambulances. The latter instructions describe procedures required if war gases are encountered.

The manual is intended primarily for the training of rescue workers, medical auxiliaries, ambulance drivers and attendants, and stretcher bearers of the Emergency Medical Service. In the appendix are a schedule of training based on the manual, the OCD operations letter describing the work of stretcher teams, the Rescue Service and instructions on self aid in case of exposure to war gas and a section on electrical hazards.

ENROLMENT OF HOSPITAL PERSONNEL IN  
THE U S CITIZENS DEFENSE CORPS

The Office of Civilian Defense, Washington, D. C., issued on November 9 Circular Medical Series No. 34 on the "Enrolment of Hospital Personnel in the U. S. Citizens Defense Corps" which presents the Office of Civilian Defense policy covering the enrolment of hospital personnel in the Citizens Defense Corps under the provisions of Office of Civilian Defense Regulations No. 3, revised in August 1943, and is intended for the guidance of commanders, chiefs of emergency medical service and hospital administrators. Certain hospital personnel may be enrolled in the following units of the Citizens Defense Corps provided all requirements regarding eligibility, registrations, training, appointment and oath as set forth in the Regulations are met.

**Medical Unit.** Persons who have duties related to the care of casualties and who are expected to report and work at the hospital as volunteers on an air raid alert.

**Nurses Aides Unit.** Volunteer Nurses Aides.

**Other Units.** Persons who have specific assignments related to the maintenance of hospital services or to the protection of hospital personnel, buildings or grounds who are expected to report and work as volunteers on air raid alerts. Such persons should be trained for and enrolled in appropriate units of the Citizens Defense Corps (Air Raid Wardens Fire Guard, Communications, Emergency Welfare Utility Repair and so on).

Provision for the movement of other essential hospital personnel during restricted periods can be made by the local defense council through appointment of such personnel to the Civilian Defense Auxiliary Group (Operations Letter No. 37 and supplements).

Registered trainees for and enrolled members of all units of the U. S. Citizens Defense Corps are eligible for War Civilian Security benefits if injured in the performance of official duties.

"Performance of official duties" includes activities at the time of an air raid alert, activities undertaken in training drills and exercises approved in accordance with Office of Civilian Defense Regulations No 3, Revised in August 1943, and going to and from posts of duty in connection with such activities

### TEMPORARY HOSPITALIZATION FOR CIVILIANS INJURED AS RESULT OF ENEMY ACTION

The Office of Civilian Defense, Washington, D C, issued on November 10 Circular Medical Series No 12, which is an amendment to the agreement between the Federal Security Agency and the Office of Civilian Defense (*THE JOURNAL*, March 21, 1942, p 983) regarding temporary hospitalization for civilians injured as the result of enemy action Under the agreement announced on March 13, 1942 the Public Health

Service planned to pay \$3 75 per patient day for hospitalization of patients of the Emergency Medical Service in both casualty receiving hospitals and emergency base hospitals This rate was based on that in effect for government hospitals at the time of the agreement as established by the Federal Board of Hospitalization Effective July 1, 1943 the Federal Board of Hospitalization has raised the per diem for government hospitals to \$4 25, and this change has been approved by the President As of July 1 the Public Health Service agreed to pay the salaries of a limited number of graduate nurses to be recruited by the Emergency Medical Service to supplement the nursing staffs of institutions designated as emergency base hospitals if and when such hospitals are activated Also effective July 1, 1943 the Public Health Service will pay the necessary minimum cost for the transportation of patients ordered by respective state chiefs of Emergency Medical Service to be transferred to emergency base hospitals

## PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

### HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their Procurement and Assignment Service quotas for Jan 1, 1944

1 Prospective interns who have not yet obtained a hospital appointment should communicate with these institutions either directly or through the office of the dean of their medical school Assistant residents and residents should direct their applications to the hospital superintendent in the usual manner

2 Institutions having a shortage of interns or residents are again invited to make their needs known to the Council on Medical Education and Hospitals In reporting shortages, hospitals should indicate the number of interns, assistant residents and residents needed to complete their quotas for Jan 1, 1944

### Hospitals Reporting Vacancies for Interns or Residents

(Continuation of list in *THE JOURNAL*, November 27, p 843)

#### ARIZONA

St Joseph's Hospital, Phoenix Capacity, 244, admissions, 9,709  
Sister M Eucharis, Superintendent (1 intern)

#### CALIFORNIA

Glendale Sanitarium and Hospital, Glendale Capacity, 277, admissions, 6,729 Dr A W Truman, Medical Director (2 interns)

California Babies' & Children's Hospital, Los Angeles Capacity, 30, admissions, 475 Rosanna Stockley, Superintendent (resident—pediatrics)

Mary's Help Hospital, San Francisco Capacity, 155, admissions, 4,536 Sister Basil, Superintendent (interns, resident)

Santa Barbara Cottage Hospital, Santa Barbara Capacity, 190, admissions, 3,651 Mrs Gladys Smits, Superintendent (1 resident)

Santa Barbara General Hospital, Santa Barbara Capacity, 312, admissions, 2,175 Mrs Eva L Wilson, Superintendent (resident—mixed)

#### COLORADO

Colorado General Hospital, Denver Capacity, 265 admissions, 4,340 Dr Maurice H Rees, Medical Superintendent (6 residents, including radiology, ophthalmology)

Colorado Psychopathic Hospital, Denver Capacity, 78 admissions, 876 Dr Charles A Rymer, Acting Director (resident—psychiatry)

St Anthony Hospital, Denver Capacity, 220, admissions, 5,275 Sister M Mechtildis, Superintendent (2 interns)

Colorado State Hospital, Pueblo Capacity, 4,387, admissions, 775 Dr F H Zimmerman, Superintendent (3 residents—psychiatry)

#### CONNECTICUT

Meriden Hospital, Meriden Capacity, 147, admissions, 3,552 Miss Nellie K Ferguson, Superintendent (2 interns)

New Haven Hospital, New Haven Capacity, 589, admissions, 11,488 Mr James A Hamilton, Director (2 residents—psychiatry)

Lawrence and Memorial Associated Hospitals New London Capacity, 291, admissions, 4,341 Mr Richard J Hancock, Administrator (3 interns)

Laurel Heights State Tuberculosis Sanatorium, Shelton Capacity, 382, admissions, 311 Dr Edward J Lynch, Medical Director (resident—tuberculosis)

#### DELAWARE

Delaware State Hospital, Farnhurst Capacity, 1,247, admissions, 340 Dr M A Tarumianz, Superintendent (resident—psychiatry)

#### DISTRICT OF COLUMBIA

Gallinger Municipal Hospital, Washington Capacity, 1,450, admissions, 15,828 Dr Edgar A Bocock, Medical Superintendent (3 assistant residents—OBG, ENT)

#### FLORIDA

Pensacola Hospital, Pensacola Capacity, 197, admissions 6,248 Sister Vincent, R N, Superintendent (intern resident—mixed)

#### ILLINOIS

City of Chicago Municipal Tuberculosis Sanitarium, Chicago Capacity, 1,219, admissions, 1,811 Dr Leo M Czaja, General Superintendent (resident—thoracic surgery)

Cook County Hospital, Chicago Capacity, 3,188, admissions, 67,328 Dr Ole C Nelson, Medical Superintendent (7 residents—pathology, radiology, psychiatry)

#### INDIANA

St Vincent's Hospital, Indianapolis Capacity, 340, admissions, 8,480 Sister Andrea, Superintendent (2 interns)

#### IOWA

Jennie Edmundson Memorial Hospital, Council Bluffs Capacity, 157, admissions, 3,010 Miss Dorothea Ely Superintendent (1 intern)

University Hospitals, Iowa City Capacity, 954 admissions, 20,996 Mr Robert E Neff, Administrator (7 residents)

#### KENTUCKY

Kentucky Baptist Hospital, Louisville Capacity, 150, admissions, 5,003 Mr H L Dobbs, Superintendent (3 interns)

St Anthony's Hospital, Louisville Capacity, 163, admissions, 4,476 Sister Mary Edigna, R N, Superintendent (1 intern)

#### MARYLAND

Bon Secours Hospital, Baltimore Capacity, 190, admissions, 3,832 Sister Helena, R N, Superintendent (2 interns)

Hospital for Women, Baltimore Capacity, 162, admissions, 3,369 Dr Merrill L Stout, Medical Director (2 interns)

St Joseph's Hospital, Baltimore Capacity, 302, admissions, 6,910 Sister M Pierre, R N, Superintendent (4 interns)

Union Memorial Hospital, Baltimore Capacity, 384, admissions, 7,847 Dr Willard L Quennell, Director (Intern, resident—OB)

Spring Grove State Hospital, Catoosville Capacity, 2,100, admissions, 619 Dr Silas W Weltmer, Medical Superintendent (residents—psychiatry)

#### MASSACHUSETTS

McLean Hospital, Belmont Capacity, 232, admissions, 212 Dr W Franklin Wood, Medical Director (4 residents—psychiatry)

Gardner State Hospital, Gardner Capacity, 1,425 admissions, 178 Dr Charles E Thompson, Medical Superintendent (3 residents—psychiatry)

Danvers State Hospital, Hathorne Capacity, 2,371 admissions, 794 Dr Clarence A Bonner, Medical Superintendent (resident—psychiatry)

Lawrence General Hospital, Lawrence Capacity, 218 admissions, 4,774 Miss Beatrice K Barnes, R N, Superintendent (1 intern)

Medfield State Hospital Medfield Capacity, 1,859, admissions, 191 Dr Earl K Holt, Medical Superintendent (resident—psychiatry)

St Luke's Hospital, New Bedford Capacity, 339, admissions, 7,585 Dr Scott Whitchee, Superintendent (1 intern)

House of Mercy Hospital Pittsfield Capacity, 243 admissions, 4,053 Miss Edith Atkin R N Superintendent (2 interns)

Middlesex County Sanatorium, Waltham Capacity, 380 admissions, 330 Dr Sumner H Remick, Medical Superintendent (resident—tuberculosis)

Waltham Hospital Waltham Capacity 215 admissions, 1172 Mr Walter R Amesbury Administrator (3 interns)  
Westfield State Sanatorium Westfield Capacity, 239 admissions 876 Dr Roy Morgan Medical Superintendent (2 residents—TB)  
Belmont Hospital Worcester Capacity 250 admissions 987 Dr Huston K Spangler Medical Superintendent (residents—TB, communicable diseases)  
Worcester City Hospital Worcester Capacity 550 admissions 11941 Dr George A Melcher Medical Superintendent (4 interns)

## MICHIGAN

Mercy Hospital Bay City Capacity 150 admissions 3960 Sr Mary Thomsine RN Superintendent (2 interns)  
Evangelical Deaconess Hospital Detroit Capacity 220 admissions 8653 John L Ernst Superintendent (resident—mixed)  
St. Mary's Hospital Detroit Capacity 387 admissions 9429 Sister Marie RN Superintendent (6 interns)  
Highland Park General Hospital Highland Park Capacity 225 admissions, 7008 Mr R E Geoghegan Superintendent (three interns)  
Mercy Hospital Jackson Capacity 150 admissions 4087 Sister Margaret Mary RN Superintendent (2 interns)  
Traverse City State Hospital Traverse City Capacity 2743 admissions 606 Dr R. Philip Sheets Medical Superintendent (residents—psychiatry)

## MISSOURI

Robert Koch Hospital Koch Capacity 698 admissions 311 Dr George D Kettelkamp Superintendent and Medical Director (2 residents—TB)  
Lutheran Hospital St. Louis Capacity 190 admissions 5136 Rev E C Hofus Superintendent (1 intern)  
City Sanitarium St. Louis Capacity 3500 admissions 756 Dr W L Moore Superintendent (4 residents—psychiatry)

## NEBRASKA

Bishop Clarkson Memorial Hospital Omaha Capacity 150 admissions 4067 Miss Cecelia Meister RN Superintendent (interns resident—surgery)

## NEW HAMPSHIRE

New Hampshire State Hospital Concord Capacity 2386 admissions 665 Dr Charles Hall Dolloff Medical Superintendent (resident—psychiatry)

## NEW JERSEY

Bayonne Hospital and Dispensary Bayonne Capacity 250 admissions 4592 Mr Joseph Brady Superintendent (4 interns)  
New Jersey Sanatorium for Tuberculosis Diseases Glen Gardner Capacity 494 admissions 512 Dr S B English Superintendent (resident—TB)  
Jersey City Hospital Jersey City Capacity 900 admissions 18432 Dr George O'Hanlon Medical Director (15 interns)  
Morristown Memorial Hospital Morristown Capacity 158 admissions 3382 Col Charles Rees Lloyd Director (interns)  
Fitkin Memorial Hospital Neptune Capacity 190 admissions 4,235 Mr William L LeStrange, Superintendent (1 intern)  
St Francis Hospital Trenton Capacity 343 admissions 7104 Sister M Regulate RN Superintendent (2 interns)

## NEW YORK

Binghamton City Hospital Binghamton Capacity 559 admissions 9690 Mr Jerome F Peck Superintendent (resident—psychiatry)  
Coney Island Hospital Brooklyn Capacity 300 admissions 6399 (2 interns)  
St Peter's Hospital Brooklyn Capacity 241 admissions 3,234 Rev Sister Charitas Superintendent (interns)  
Our Lady of Victory Hospital Lackawanna Capacity 180 admissions 3991 Sister M Bathilde Superintendent (2 interns)  
Middletown State Homoeopathic Hospital Middletown Capacity 3538 admissions 685 Dr Walter A Schmitz Medical Superintendent (2 residents—psychiatry)  
New Rochelle Hospital New Rochelle Capacity 309 admissions 6516 Mr Alex E. Norton Superintendent (1 intern)  
Bronx Hospital New York City Capacity 409 admissions 8897 Mr William D Seltzer Superintendent (4 interns)  
French Hospital New York City Capacity 332 admissions 6074 Sister Mary of St Odile Superintendent (intern 2 residents—anaesthesia OB)  
Harlem Hospital New York City Capacity 763 admissions 16959 Dr E Lifshutz Medical Director (2 interns)  
Knickerbocker Hospital New York City Capacity 200 admissions 3550 Mr B E. Foss Superintendent (5 interns)  
Misericordia Hospital New York City Capacity 263 admissions 4061 Sister St. Theresa RN Superintendent (2 interns)  
Montefiore Hospital for Chronic Diseases New York City Capacity 713 admissions 1720 Dr E M Bluestone Director (resident—dermatology)  
New York City Hospital New York Capacity 880 admissions 8538 Dr Thomas I Price Superintendent (resident—neurology)  
New York Polyclinic Medical School and Hospital New York Capacity 374 admissions 8356 Mr A A Jaller Executive Officer (2 interns 2 assistant residents—anaesthesia EENT)  
Riverside Hospital New York Capacity 360 admissions 606 Dr John A. Cabill Medical Superintendent (4 asst. residents—TB)  
Municipal Sanatorium Otisville Capacity 420 admissions 588 Dr I D Bobrowitz Medical Superintendent (2 residents—TB)  
Iola Monroe County Tuberculosis Sanatorium Rochester Capacity 170 admissions 332 Dr Ezra Bridge, Medical Superintendent (resident—TB)  
St. Vincent Hospital Staten Island Capacity 2008 admissions 2251 Dr Morris A Jacobs Medical Superintendent (12 residents—TB)

Staten Island Hospital Staten Island Capacity 304 admissions 5506 Mr William E P Collins Superintendent (5 interns)  
Troy Hospital Troy Capacity 296 admissions, 4546 Sister Angela Superintendent (4 interns)  
White Plains Hospital White Plains Capacity 202 admissions 4297 Mr Thomas T Murray, Superintendent (2 interns)  
Harlem Valley State Hospital Wingdale Capacity, 4627 admissions 492 Dr Harry A La Burt Medical Superintendent (3 residents—psychiatry)  
St Joseph's Hospital Yonkers Capacity 197 admissions 2554 Sister Mary Barbara Superintendent (2 interns)

## NORTH CAROLINA

Park View Hospital Rocky Mount Capacity, 120 admissions 2782 Mr J L Melvin Superintendent (1—mixed)

## NORTH DAKOTA

St John's Hospital Fargo Capacity 230 admissions 6605 Sister Harriet RN, Superintendent (2—mixed)

## OHIO

Deaconess Hospital Cincinnati Capacity 205 admissions 5042 Mr William H Frersling Superintendent (2 interns)

## OREGON

Oregon State Hospital Salem Capacity 2800 admissions 999 Dr John C Evans Medical Superintendent (residents—psychiatry)

## PENNSYLVANIA

Allentown Hospital Allentown Capacity 375 admissions 8293 Mr George W Sherer Superintendent (1 intern)  
Altoona Hospital Altoona Capacity 185 admissions 3634 Mr Robert L Gill Superintendent (2 interns)  
Mercy Hospital Altoona Capacity 180 admissions 3867 Mother M Ottilia Superintendent (interns)  
Nesbitt Memorial Hospital, Kingston Capacity 130 admissions 3,248 Mr Kingsley A Eckert, Superintendent (1 intern)  
Norristown State Hospital Norristown Capacity 4308 admissions 915 Dr Arthur P Noyes Medical Superintendent (3 residents—psychiatry)  
Philadelphia Hospital for Contagious Disease Philadelphia Capacity 1000 admissions 4933 Dr Pascal F Luchesi Superintendent & Medical Superintendent (2 assistant residents)  
St Joseph's Hospital Philadelphia Capacity 269 admissions 4093 Sister Eulalia R.N., Superintendent (interns)  
Warren State Hospital Warren Capacity 2700 admissions 698 Dr Robert H Israel Superintendent (residents—psychiatry)  
White Haven Sanatorium White Haven Capacity 240 admissions 274 Mr Harold Prentzel Administrator (residents—TB)  
Wilkes-Barre General Hospital Wilkes-Barre Capacity 403 admissions 7894 Mr Elmer E Matthews Administrator (1 intern)

## RHODE ISLAND

Memorial Hospital Pawtucket Capacity 196 admissions 4382 Mr Walter E Wright Superintendent (4 interns)  
Butler Hospital Providence Capacity 174 admissions, 167 Dr Arthur H Ruggles Medical Superintendent (resident—psychiatry)  
Rhode Island Hospital Providence Capacity 463 admissions 10059 Dr D L Richardson Medical Superintendent (1 intern)

## TEXAS

Texas Scottish Rite Hospital for Crippled Children Dallas Capacity 50 admissions 580 Miss Annie Laurie Little R.N Superintendent (assistant resident—orthopedics)  
St Mary's Infirmary Galveston Capacity 235 admissions 4338 Sister Mary Leah Superintendent (resident—mixed)  
Nix Hospital San Antonio Capacity 188 admissions 4768 Miss Ellen Louise Brient, RN Superintendent (1 intern)  
Robert B Green Memorial Hospital San Antonio Capacity 270 admissions 4803 Dr Alexander Millean Jr Medical Superintendent (resident—mixed)

## UTAH

Holy Cross Hospital Salt Lake City Capacity 274 admissions 6250 Sister Mary Virginia RN Superintendent (intern resident—mixed)

## WASHINGTON

Western State Hospital Fort Steilacoom Capacity 3034 admissions 967 Dr William N Keller Medical Superintendent (resident—psychiatry)  
Eastern State Hospital Medical Lake Capacity 2099 admissions 489 Dr M W Conway Superintendent (resident—psychiatry)  
Children's Orthopedic Hospital Seattle Capacity 117 admissions 1423 Miss Lillian M Thompson RN Superintendent (1 resident)  
Virginia Mason Hospital Seattle Capacity 208 admissions 6078 Mr John A Dare Administrator (resident—medicine)

## WEST VIRGINIA

Hopewell Sanitarium Hopewell Capacity 475 admissions 409 Dr David Salkin, Medical Superintendent (2 residents)  
St Joseph's Hospital Parkersburg Capacity 14 admissions 3039 Sister M Adelaide RN Superintendent (1 intern)

## WISCONSIN

Milwaukee Hospital Milwaukee Capacity 359 admissions 8472 Rev William G Solt Superintendent (1 intern)  
St Mary's Hospital Madison Capacity 225 admissions 6657 Sister Mary Bernadette RN Superintendent (intern resident—OB)

# ORGANIZATION SECTION

## COUNCIL ON MEDICAL SERVICE AND PUBLIC RELATIONS

### THE PURPOSES AND FUNCTIONS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED THE PUBLICATION OF THE FOLLOWING  
STATEMENT J. W. HOLLOWAY JR., Acting Secretary

The Council was authorized by the House of Delegates of the American Medical Association at its annual session in Chicago in June 1943. The members of the Council were immediately appointed by the Board of Trustees. Section 4 of chapter IX of the By-Laws provides that the duties of the Council shall be as follows:

"(1) To make available facts, data and medical opinions with respect to timely and adequate rendition of medical care to the American people,

"(2) to inform the constituent associations and component societies of proposed changes affecting medical care in the nation,

"(3) to inform constituent associations and component societies regarding the activities of the Council,

"(4) to investigate matters pertaining to the economic, social and similar aspects of medical care for all the people,

"(5) to study and suggest means for the distribution of medical services to the public consistent with the principles adopted by the House of Delegates, and

"(6) to develop and assist committees on medical service and public relations originating within the constituent associations and component societies of the American Medical Association.

"In the exercise of its functions, this Council, with the cooperation of the Board of Trustees, shall utilize the functions and personnel of the Bureau of Legal Medicine and Legislation, the Bureau of Medical Economics and the Department of Public Relations in the Headquarters Office."

The Council is also bound by the actions of the House of Delegates on the subject of medical care and its distribution, notably the platform adopted in 1937 as amended and amplified in subsequent years by the various resolutions and reference committee reports adopted by the House of Delegates.

In order to carry out these functions, the Council has organized as follows:

#### ORGANIZATION

- Officers—The Council shall elect annually

A chairman

A vice chairman

A full time secretary

An executive committee of three shall be created, which shall include the chairman, the Council member of the Board of Trustees and a third member to be chosen annually from the duly appointed or elected members of the Council on Medical Service and Public Relations. This committee shall exercise such functions as are delegated to it by the Council.

The central office of the Council is to be located in the office building of the American Medical Association in Chicago.

The functions of the Council outlined in the By-Laws are closely integrated and cannot well be considered separately. To carry them out, it is obvious that the Council must have adequate sources of information, maintain close contact with constituent associations and component societies, and establish close relationship with the already existing bureaus and departments of the Association.

The Council, therefore, subject to the approval of the Board of Trustees, has decided on the following methods of operation:

1 In carrying out the directive in the By-Laws as to relationship with the other bureaus and departments of the Association, the Council has established close collaboration (a) with the Bureau of Medical Economics, which has been asked and has expressed the willingness to do the research on many of the economic problems necessary for the Council's study, and which

is well equipped to carry out such research, (b) with the Bureau of Legal Medicine and Legislation. Joint bulletins will be issued with that bureau on legislative matters. Attempt will be made to effect wider distribution and, if necessary, more frequent publication of such bulletins, (c) with the Department of Public Relations. The Council shall utilize the sources of information of this department, and joint bulletins may be issued from time to time with it and, if indicated, with other bureaus of the American Medical Association. All planning will be to avoid overlapping of functions and duplication of effort.

2 The Council on Medical Service and Public Relations has extended the sources of information of the American Medical Association on problems with which the Council is specifically concerned. Through its membership and by cooperation with constituent associations and component societies and the utilization of other facilities, the Council will disseminate such information toward effecting its objectives. The secretary of the Council, with its approval, will undertake such travel as may be necessary.

3 In order that constituent associations and component societies may be kept informed of the activities of the Council and of proposed changes in the status of medical care, and that the Council may be of assistance to those associations and societies, the Council has requested each state association to designate an existing committee or create a new committee to function with the Council on a state level.

Each state organization has also been requested to contact each component society in the state and ask it similarly to designate or form a committee to function in connection with the programs of the Council. Where such organization is feasible, it has been suggested that committees be created along the lines of congressional districts.

Such state and county committees have been urged to keep the Council informed of their local problems and activities.

State organizations also will be requested from time to time to conduct experiments in the various methods of medical care and to inform the Council of their results so that the Council may study and evaluate the experiments and transmit the information acquired to all concerned.

4 The Council feels that under its directive it is its duty to endeavor to evolve such modifications of our present system of medical care as may be necessary to cover all the people and be in accord with the traditions of American medicine as to high standards of medical care and the American tradition of free enterprise as already outlined in paragraph 1 of the Council's policies previously published. To accomplish this, study must be made of all economic, social and similar aspects of such care.

5 In order that the above program may be effectively carried out, the secretary of the Council, with the guidance of the Council in conformity with the above expressed relationships with other bureaus and departments, shall inform the profession through the various state organizations of all pending national legislation and bureau directives affecting the practice of medicine. It shall likewise be his duty, with the guidance of the Council, to arrange for medical representation at meetings and hearings pertaining to medical care, collaborating in the representation with other councils and bureaus of the American Medical Association that have an interest in this same subject.

6 The secretary is instructed, with the supervision of the Council and in collaboration with the Department of Public Relations, to disseminate information concerning the activities of the Council through the publications of the American Medical Association and the various state medical journals, and to prepare and release information on medical care.

The Council has already issued its Statement of General Policies, and it will act in accordance with those Policies and the above methods of functioning.



## MEDICAL LEGISLATION

## MEDICAL BILLS IN CONGRESS

*Changes in Status*—S 763 has passed the Senate and House, proposing to amend in several respects the Selective Training and Service Act of 1940. Among other things, this bill would direct the President to appoint a commission of five qualified physicians to examine the physical, mental and moral qualification requirements for admission to the Army, Navy and Marine Corps and to recommend to the President any changes therein which it believes can be made without impairing the efficiency of the armed services. This commission, it is contemplated, will consist of one Army officer, one Navy officer and three qualified civilian physicians not employed by the federal government. As passed by the House, section 1 of this bill concluded with the following proviso: "Provided, That no individuals shall be called for induction, ordered to report to induction stations, or be inducted because of their occupations, or by occupational groups, or by groups in any plant or institutions." The conference committee on the bill added to the foregoing proviso this exception "except pursuant to a requisition by the land or naval forces for persons in needed medical professional and specialist categories." The recommendation of the conference committee was accepted by the House and Senate, and the bill is now before the President for executive action. H R 3687 has passed the House a bill to provide revenue. It is estimated that as passed by the House this bill will produce revenue in the amount of \$2139,300,000 instead of the \$10,500,000,000 as requested by the Treasury Department. Personal income taxes will be increased by \$154,800,000, taxes on corporations by \$616,000,000, various excise taxes by \$1,201,700,000 and postal rates by \$166,800,000. The credit for earned income will be eliminated, and the normal tax rate on individual incomes will be increased from 6 to 10 per cent. The victory tax has been eliminated. Section 112 of the bill will require many associations now exempt from federal income taxes under section 101 of the Internal Revenue Code to file annual informational returns with the Commissioner of Internal Revenue stating specifically the items of gross income, receipts and disbursements and such other information as the Commissioner may require. The pending bill does not contemplate that any tax at this time will be imposed on the income of associations now exempt, the return requirement being solely for the information of the Bureau of Internal Revenue. Exempt from this return requirement will be, broadly stated, religious, educational and charitable organizations. The new tax bill also provides for a special deduction for blind persons in the amount of \$500.

SPECIAL SUBCOMMITTEE OF SENATE ON  
WARTIME HEALTH AND EDUCATION  
TO HOLD HEARING

The first field hearings of the Special Senate Subcommittee on Wartime Health and Education have been scheduled for December 16-18 in Pascagoula, Miss., Senator Claude Pepper, chairman of the subcommittee, announced on Monday. The hearing will be preceded by a four week investigation in Pascagoula and vicinity by staff investigators of the committee.

The Pascagoula study is one of a series from which the committee will "draw a national pattern of the nation's state of wartime health," Senator Pepper said. The investigations and hearings will establish facts which will be the basis of committee recommendations of remedial measures when the field series has been completed, he said.

The subcommittee on Wartime Health and Education was established by Senate resolution in June. It is charged with the responsibility of making "full and complete study and investigation regarding the distribution and utilization of medical personnel, facilities and related health services" and "deficiencies in health and education among persons otherwise fit for service with the armed forces and persons otherwise fit to be employed to the best advantage in agriculture, industry and other activities, so as best to promote the war and victory for our cause."

Pascagoula, Senator Pepper pointed out, is a production center which has grown "almost overnight" from a small community to "a crowded boom town." It presents most of the wartime health problems of the typical congested area, he said.

"Many of the state and federal agencies working in the Pascagoula area already have offered cooperation in making this field study thorough and successful," the senator said. "We feel that by sampling the nation's health in a number of these field studies we shall be in a position to report accurate and complete findings to the Senate and to recommend scientifically sound legislative remedies for the unsatisfactory conditions we discover."

Committee staff investigators arrived in Pascagoula Thursday of last week. They will study conditions in the fields of medical care, food and nutrition, housing and hospital and clinic facilities. This study will not deal with problems in education other than those directly related to health, Senator Pepper said. Other members of the committee are Senators Elbert D. Thomas of Utah, James M. Tunnell of Delaware, Robert M. LaFollette Jr. of Wisconsin and Kenneth S. Wherry of Nebraska. Randolph Feltus, staff director of the committee, is in charge of the investigation.

## WOMAN'S AUXILIARY

## Georgia

Mrs. Olin S. Cofer of Atlanta, president of the Woman's Auxiliary to the Georgia State Medical Society, indicated that the Georgia auxiliary will stress nutrition, tuberculosis, cancer and venereal disease education this year. She said "The auxiliary feels that health education is its most urgent responsibility, not only for the present war period, but for future generations."

The Georgia auxiliary awards a cup (the Mrs. James N. Branner trophy) to the local auxiliary making the highest score on a carefully worked out plan of credits. There are eighteen worthwhile items on the standard of excellence.

## Michigan

The seventeenth annual meeting of the Woman's Auxiliary to the Michigan State Medical Society was held in Detroit September 20-22, with sixty-three delegates and forty-three guests attending. There were a number of social events, including the annual banquet, where Dr. H. H. Cummings, president of the Michigan Medical Society, spoke, stressing the need of unity at this time. Dr. F. C. Reeder, chairman of the advisory council, urged that doctors' wives be requested

with legislative bills pending. Mrs. Eben J. Carey, national president, explained the Nurses Cadet Corps project, which the national auxiliary endorses as a project for immediate work.

Mrs. Gordon L. Willoughby, state president, presided over convention sessions. Twenty-two county presidents gave reports of the work done in their counties. The new officers elected are Mrs. John J. Welch, president, Mrs. H. L. French, president-elect, Mrs. L. C. Harnie, vice president, Mrs. R. G. Alter, treasurer, Mrs. Otto Hult, secretary, and Mrs. R. H. Frazier, director of the Student Loan Fund. In her inaugural address Mrs. John J. Welch urged the continuance of war service projects, registration of nurses, study of child delinquency and the need of the auxiliaries taking as a new project the Nurses Cadet Recruiting and keeping informed on medical legislation.

At the auxiliary's annual luncheon Mrs. Gordon L. Willoughby, retiring state president, presented a medical kit to Lieut. William E. Tracy for use in the Submarine Chaser P C 1139. Exhibits showing the results of the tuberculosis radio contest and the press books for the year were on display.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATIVE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Personal**—Dr Herbert S Chapman, Stockton, has been appointed a member of the state board of medical examiners to succeed Dr Fred R DeLappe, Modesto, a member of the board since 1931 and president for a number of times—Dr Charles H Bulson, Napa, recently completed fifty years in the practice of medicine. He is a medical examiner for the drift board and chairman of the medical staff of Victory Hospital, Napa—Dr Alexander Simon, who has been senior medical officer at St Elizabeths Hospital, Washington, D C, for the past twelve years and associate professor of neurology at the George Washington University School of Medicine, has been appointed assistant medical director of the Langley Porter Clinic for Mental Diseases.

**Surgical Prizes Awarded**—First prize in the San Francisco Surgical Society's annual prize essay contest recently was awarded to Capt Sanford E Leeds, M R C, for his paper entitled "The Effects of Occlusion of Experimental Chronic Patent Ductus Arteriosus on the Cardiac Output, Pulse and Blood Pressure of Dogs." Second prize went to Dr Victor Richards, San Francisco for his paper on "Refrigeration Anesthesia in Surgery." The San Francisco Surgical Society inaugurated the contest in 1942, announcing at that time that the first and second prizes were to be \$150 and \$100 respectively (*THE JOURNAL*, January 23, page 270). The authors were to be physicians in the field of general surgery and in the period of graduate training not more than six years removed from graduation from medical school.

**Psychoanalytic Society Now Active**—The San Francisco Psychoanalytic Society, a group organized in 1942 but which became active only recently, held a meeting in the Ambassador Hotel, Los Angeles, October 23-24, under the presidency of Dr Ernst Simmel, Los Angeles. The following program was presented:

Capt Joseph Biernoff, M R C, Psychiatric Notes from an American Station Hospital in Australia  
Lieut Comdr E C Moloney (MC), U S Navy (subject not announced)

Dr Jacob S Kasanin, San Francisco Neuroses of War Wives  
R Nevitt Sanford, Berkeley, Optimistic and Pessimistic Attitudes Toward the War and the Peace  
Hon Edward R Brand, judge of the Los Angeles Superior Court, War and Crime

Mrs Susan A Bernfeld, Patriotism of Prison Inmates  
Siegfried Bernfeld, Ph D, San Francisco, Psychology of Witnesses in Rioting and Lynching  
Anna Maenchen, Ph D, San Francisco, Superego Development in War time

Dr Simmel, Remarks on War and Mental Hygiene  
Dr Malcolm H Finley, San Francisco, Blood Pressure and Its Relation to Masochism and Suicide  
Dr May E G Romm, Beverly Hills, Aggression in Fetishism  
Dr Otto Fenichel, Los Angeles, The Manic Depressive Mental Disorders

Dr Donald A Macfarlane, Berkeley, The Psychoanalyst's Personal Attitude in Relation to the Phenomenon of "Acting Out"

The society has pledged itself to disseminate knowledge about psychoanalysis in California and to train medical psychoanalysts under the auspices of the Topeka Institute for Psychoanalysis located in Topeka, Kan, with branches in Los Angeles and San Francisco. Other officers of the San Francisco Psychoanalytic Society are Dr Bernhard Berliner, San Francisco, vice president, and Dr Kasanin, secretary-treasurer.

### COLORADO

**Dr Clark Lectures on Tropical Diseases**—Dr Herbert C Clark, director of the Gorgas Memorial Laboratory, Panama, lectured in Denver, November 29-30, under auspices of the John and Mary R Markle Foundation and the National Research Council. The titles of his lectures were "Malaria Precautions in the Unsanitary Areas of the Tropical Lowlands" and "Distribution and Complication of Amebic Lesions Found in One Hundred and Eighty-Six Postmortem Examinations."

**Personal**—Mr Walter J Bailey has resigned as superintendent of the Memorial Hospital, Colorado Springs, formerly known as the Beth-El General Hospital and Sanatorium—Dr Edward R Mugrage, president-elect of the Colorado State Medical Society, was awarded one of two Alumni Recognition Medals given by the Alumni Association of the University of Colorado, October 23, "on the basis of his scientific achieve-

ments, and particularly because of his interest in, and assistance to, many generations of students in the medical school of the university"—Dr Thomas E Carmody, Denver, has been elected a member of the honor society of the American Academy of Ophthalmology and Otolaryngology.

### CONNECTICUT

**Secretary Named for Alumni of Alcohol Studies**—In an effort to maintain contact with the alumni of the first School of Alcohol Studies at Yale University, New Haven, Rev Wayne W Womer, 59 Lexington Road, West Hartford, has been named secretary. He will keep in touch with the alumni of the school, which recently completed a six weeks session, and compile a record of their activities. The School of Alcohol Studies, which opened on July 8 under the direction of Elvin M Jellinek, Sc D, of the Yale Laboratory of Applied Physiology, was said to be the first formal school in the academic history of the United States to study the consequences of alcohol (*THE JOURNAL*, June 12, p 454). The school has undertaken a study of children of alcoholic parents, psychotic parents and normal parents who were brought up in foster homes. This work is financed by a grant-in-aid from the Carnegie Corporation in New York and was begun by the late Barbara S Burks, Ph D, but will be continued by Anne Roe, Ph D, secretary of the psychologic section of the New York Academy of Sciences, who has joined the staff of the School of Alcohol Studies. Selden Bacon, Ph D, assistant professor of sociology at Yale, is a new member of the research staff. The alcohol school plans to publish an alumni bulletin twice a year.

### DISTRICT OF COLUMBIA

**Personal**—Dr Philip S Owen, technical aid to the subcommittee on medical food requirements, advisory to the Office of Price Administration, has been named technical aid to the division of medical sciences, National Research Council, Washington, D C, to succeed Dr George K Anderson, now Secretary of the Council on Foods and Nutrition of the American Medical Association—Dr Winfred Overholser, medical superintendent of St Elizabeths Hospital, has been appointed associate editor of *Medical Annals*, official publication of the Medical Society of the District of Columbia.

### GEORGIA

**Physician Observes Ninety-Seventh Birthday**—Dr Thomas D Longino, College Park, observed his ninety-seventh birthday, September 7. Dr Longino graduated at the Medical College of Georgia, Augusta, in 1870 and at the Jefferson Medical College of Philadelphia in 1882.

**Quarantine on Patients with Communicable Tuberculosis**—The state department of health has established a quarantine on residents of Georgia suffering from communicable tuberculosis who refuse to obey medical instructions, newspapers reported, November 14. Violators of the order, which was adopted on November 12 by the state board of health, will be punished for a misdemeanor, it was announced.

### ILLINOIS

**Change in Health Officers**—Dr Fred O Tonney, formerly director of laboratories and research of the Chicago Board of Health, has been named health officer of district number two, comprising Lake, McHenry and Boone counties, with headquarters in Woodstock.

**Society News**—The Whiteside County Medical Society will be addressed at Sterling, December 9, by Drs Donald D M Cook and Muriel K Fuller, Chicago, on "The Cook-Fuller Theory of the Cause of Gastric and Duodenal Ulcer. Its Implications on the Medical and Surgical Treatment of Ulcer."

### Chicago

**First Neighborhood Forum on Cancer**—On December 1 the first neighborhood public forum on cancer, arranged by the Chicago Cancer Committee, Inc, was held in the Jewish People's Institute with Dorph Brown, dean, Herzl Junior College, acting as moderator and Dr Ludvig Hektoen, chairman of the cancer committee, presenting the introductory statement. Other speakers were:

Dr Bowman C Crowell, The Course of Cancer  
Dr Josiah J Moore, The Causes of Cancer  
Dr Herbert E Schmitz, The Diagnosis of Cancer  
Dr John A Wolfer, The Curability of Cancer  
Dr Frederick W Merrifield, What the Patient Can Do About It

**Personal**—Dr Charles Edward Remy has been returned to inactive duty status by the U S Public Health Service to develop plans that are arising for postwar projects in the hospital field—Harold C Wiggers, Ph D, assistant professor

of physiology at the Western Reserve University School of Medicine, Cleveland, has been appointed associate professor of physiology at the University of Illinois College of Medicine—Mr Homer F Sanger, in charge of hospital activities of the Council on Medical Education and Hospitals, American Medical Association, will retire from the staff on January 1. Mr Sanger has been with the Council for more than twenty-four years, with the exception of a short time in 1921 when he served as superintendent of the Central Free Dispensary.

### INDIANA

**Treasurer for Forty Years**—Dr Charles Hupe was recently given a testimonial dinner in recognition of his sixty years as a practicing physician in Lafayette. Dr Hupe, who is 86 years of age, has been treasurer of the Tippecanoe County Medical Society for more than forty years. He is considered the county's oldest practicing physician.

**Dr Donchess Named Chief Surgeon of Steel Corporation**—Dr Joseph C Donchess has been appointed chief surgeon of the Gary Steel Works, where he has been assistant surgeon and the Gary Sheet and Tin Mill, according to the Carnegie-Illinois Steel Corporation. He succeeds the late Dr Frank W Merritt. Dr Donchess, who graduated at the University of Pittsburgh School of Medicine in 1932, has been assistant surgeon on the Gary Works medical staff since January 1937.

### IOWA

**Harlan Wood Goes to Minnesota**—Harlan G Wood, Ph.D., since 1936 research assistant in bacteriology at the Iowa State College of Agriculture and Mechanic Arts, Ames, has been appointed associate professor of physiologic chemistry at the University of Minnesota. He will be responsible for studies on the biochemical aspects of the virus-host relationship in poliomyelitis in the research program now being conducted at the University of Minnesota under the auspices of the National Foundation for Infantile Paralysis. Dr Wood received the 1942 Eli Lilly Company research award for his contributions to bacterial physiology (THE JOURNAL, February 13, page 531).

### LOUISIANA

**Honor Society Holds Key Ceremony**—On November 9 the annual ceremony of presentation of keys to the newly elected members of the Circle, honorary scholastic society of the Louisiana State University School of Medicine, New Orleans, was held. Dr Chester A Stewart, professor and director of the department of pediatrics, who was chosen honorary member for the year, gave an address entitled "Medicine Marches On." New members of the society who were presented with keys are Miss Evelyn Katz, Alfredo Perez, Ellis Mischle, Sydney Lewis and John Signorelli of the senior class and James Decuers, Miss Anna Costanza and Elliott Roy of the junior class. After the ceremony a banquet was held in honor of Dr James D Rives, clinical professor of surgery, who is retiring as chairman of the faculty advisory committee of the society.

**Medical Ethics**—The Louisiana State University Society of Medical Sciences conducted a round table discussion on "Medical Ethics" November 15 at the Louisiana State University Medical Center, New Orleans. The session aimed to show the practical problems in ethical relationships encountered by the practitioner. Among the speakers were Drs Edgar Hull, Isidore Cohn and Edwin L J Zander, all members of the faculty at Louisiana representing the specialties of medicine, surgery and obstetrics/gynecology. Herbert Derman, senior medical student and president of the society, acted as moderator. The discussion covered such questions as fee splitting, professional secrecy, abortion, the position of the Catholic doctor on contraception, the extent and abuses of professional courtesy, obligations of the physician advertising, euthanasia and establishment of fees.

### MASSACHUSETTS

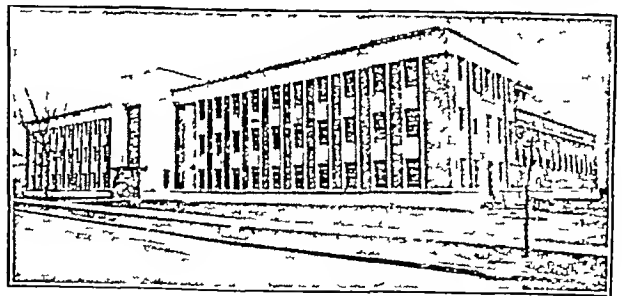
**Gonococcus Culture Service Inaugurated**—The Massachusetts Department of Public Health announces a new gonococcus culture service to physicians of the state. In the department's opinion the utilization of cultural methods will be of aid in the control of certain types of gonococcal infections. Physicians wishing to use the service should request mailing kits from the bacteriologic laboratory, Room 527 State House, Boston. All containers will be stamped with an expiration date and if not used by that time should be returned to the laboratory whereupon fresh outfits will be sent to the physician.

**Children's Center Fills Need**—The Children's Center in Boston established in January 1943 under the auspices of the Judge Baker Guidance Center and aided by a grant from the Rockefeller Foundation, is proving to be a valuable organization, according to the *New England Journal of Medicine*. During the first half year of its existence applications were received for nearly 250 children, stemming from thirty-seven agencies, private physicians and direct neighborhood contacts. The center was established in Roxbury near a low income community, as an independent organization with its own staff, under the direction of Dr Marian C Putnam and Mrs Beata Rank. Its purpose was to provide day nursery care and psychiatric consultation and treatment for infants and preschool children. It has been furnishing day nursery care, which is open to a group of 30 to 35 children with an age range from infancy to 5 years, inpatient care for a few children whose residence at home is temporarily inadvisable, therapeutic and educational work with parents and children, a consultation service available to the whole community, and facilities for the training and teaching of students in the various fields of child care. In this last respect, teaching programs are being offered for various professional people—social workers, nursery school teachers, volunteers and students in child care and, ultimately, psychiatrists and pediatricians. A special grant from the Rockefeller Foundation helps to open the opportunity for study and research.

### MICHIGAN

**New Department of Tropical Diseases**—Dr Lowell T Coggeshall, professor of epidemiology, has been appointed professor and chairman of the newly organized department of tropical diseases at the School of Public Health, University of Michigan, Ann Arbor. The new arrangement divides tropical diseases from the old department of epidemiology, of which Dr Thomas Francis Jr is chairman.

**New School of Public Health**—The University of Michigan School of Public Health, Ann Arbor, is now completed and officially functioning. A series of dedicatory addresses given primarily for the benefit of the students at the school will constitute the official dedication of the school, the first of which was delivered by Thomas Parran, surgeon general of the U S Public Health Service, during the recent Inter-American Conference of Schools of Public Health at Ann Arbor on "The Service of the Public Health Schools to the Nation's Health." The building and its equipment cost \$750,000, of which \$400,000 was provided by the W K Kellogg Foundation, \$300,000 by the Rockefeller Foundation and \$50,000 by the National Foundation for Infantile Paralysis. The site was offered by the university. The school embraces a three story



New School of Public Health

section and two wings, forming a U. The U is closed by a service and animal unit, thus completing a rectangle. The three story section is devoted to academic instruction in the fields of public health practice, epidemiology, physiologic hygiene, child health, public health statistics, nutrition, mental health, public health dentistry and health education. An auditorium seats 200 students and is adjoined by a museum for health education. There is a library on the third floor and a series of conference seminar and teaching rooms for programs in continued education and postgraduate service. The south wing is devoted to laboratories for epidemiology and public health laboratory service, the first floor being devoted to virus diseases, the second floor to parasitic and tropical diseases. The north wing is designed for services in environmental health, industrial health laboratories are on the first floor and public health engineering laboratories on the second floor.

## MISSOURI

**Medical-Dental Bowling League**—The Jackson County Medical-Dental Bowling League held its first meeting of the season on October 28. Officers include Drs Oliver S Gilliland, Kansas City, president and Chester M Counsell, Kansas City, secretary.

**Changes in the Faculty at Washington University**—Announcement is made of the following promotions in the faculty of Washington University School of Medicine, St. Louis, among others:

Dr Edward G McGarran to professor of public health administration and acting head of the department of public health

Dr Margaret G Smith to associate professor of pathology

Dr Frederick O Schwartz to associate professor of clinical ophthalmology

Dr Gerty T Cori to associate professor of research biologic chemistry and pharmacology

Lieut Col Earl H Perry, M C, U S Army, retired, to associate professor of military science and tactics

Drs Carl G Harford and John R Smith to assistant professor of medicine

Drs Paul O Hageman, Samuel B Grant, Walter Lischel, Alfred Goldman, Arthur Strauss and Llewellyn Sale to assistant professor of clinical medicine

Dr Adolph H Conrad to assistant professor of clinical dermatology

Drs William O Russell and Paul A Wheeler to assistant professor of pathology

Drs Howard Rommell Hildreth and Carl C Baisbirth to assistant professor of clinical ophthalmology

Hironu Tsuchiya, Sc D, to assistant professor of parasitology

New appointments to the faculty include those of Dr Thomas Dale Stewart, Washington, D C, as visiting professor of anatomy, Dr Samuel H Gray, St. Louis, as associate professor of pathology, Dr Hans B Molholm, Akron, Ohio, as assistant professor of psychiatry and Dr Harry W Wiese, St. Louis, as instructor in clinical medicine. The following members of the staff have retired recently with the titles indicated: Dr Harry W Lyman, professor emeritus of clinical otolaryngology, Dr Frederick E Woodruff, associate professor of clinical ophthalmology, Drs Walter Baumgarten and Louis H Hempelmann, assistant professors emeritus of clinical medicine, Dr Adolph G Schlossstein, assistant professor emeritus of clinical obstetrics and gynecology, and Dr Thomas B Pote, lecturer emeritus in pathology. Dr David McK Rioch has resigned as professor of neurology at the school to become director of research at the Chestnut Lodge Sanitarium, Rockville, Md.

## NEBRASKA

**First "Quick Treatment" Venereal Hospital Opened**—On November 1 the first state-federal "quick treatment" hospital for venereal patients opened at the former home of the Salvation Army Booth Memorial Hospital in Omaha. A federal grant of \$100,000 was reported to assist in the financing of the hospital.

## NEW YORK

**Personal**—Drs Henry L Bibby and Frederick W Holcomb, Kingston, have been named in charge of a new committee for Russian War Relief of Kingston.—Dr Harry A LaBurt, medical superintendent of the Harlem Valley State Hospital, Wingdale, has been named to a similar position at Creedmore State Hospital, Queens Village. Dr Jesse L Bennett has been acting superintendent and will remain there as first assistant, it is reported.

## New York City

**Personal**—Students of the School of Nursing of St. Luke's Hospital presented a sum of money to the medical library of the hospital for the purchase of books as a memorial to the late Dr Theophilus P Allen, associate attending physician, who died January 27.—Dr Edward I Salisbury has been made medical director of United Fruit Company to succeed Dr Roland C Connor, executive vice president.

**Finances of Physicians' Home**—The annual financial statement of the Physicians' Home for the fiscal year started Oct 1, 1942 and ended Sept 30, 1943 shows total assets of \$62,928.38, with \$48,689.54 of this a general fund surplus and \$14,238.84 in restricted funds. During the year the home received \$13,558.76, of which \$12,015.16 was from dues and contributions and \$1,543.60 income from investments. It expended \$5,988.88, the care of guests taking \$5,295.65.

**Dr Cowles Wins Appeal in License Revocation**—The revocation of the license to practice medicine of Dr Edward Spence Cowles for one year was set aside by unanimous vote of the appellate division, third department, the New York Sun reported, November 11. Dr Cowles's license had been suspended on April 16 by the board of regents, which found him guilty of "fraud and deceit" in the conduct of his Body and Mind Foundation, specifically for permitting Rudolph (Robert) Rebold to work at the Body and Mind Clinic though he had

no state license (THE JOURNAL, May 1, p 50). The court ruled in the recent decision that Dr Cowles was justified in believing that Rebold was licensed.

**Fugitive Physician Must Return to Serve Sentence**—Dr Louis G Small, who early this year was the subject of a countrywide search and who was subsequently arrested in Eastman, Ga., on charges of practicing medicine there without a license, a misdemeanor in Georgia, must return to New York to serve a three to six year jail sentence in accordance with a ruling by the Georgia Supreme Court. Dr Small was sentenced after his General Sessions conviction for operating an abortion mill with two other physicians (THE JOURNAL, May 15, p 188). According to newspaper reports, when New York detectives went to Eastman to return Dr Small to New York, residents there supported the physician because of the shortage of doctors in the town and threatened violence to the detectives. After the physician's subsequent arrest in Eastman on charges of practicing without a license, Governor Ellis Arnall of Georgia granted extradition to New York, it was stated, but a superior court judge in Eastman blocked the proceedings by ruling that the city court of Eastman had a prior claim. On November 10 the Georgia Supreme Court ruled that the Eastman court must waive its right to try Small on the misdemeanor charge. In arguments before the Supreme Court it was pointed out that Georgia authorities had made no effort to proceed against the doctor and that he was allegedly still practicing medicine there.

## NORTH DAKOTA

**District Health Office Abandoned**—The district health office which has been maintained at Valley City for six years has been discontinued as the result of the action by the board of county commissioners. The board is said to have repudiated a promise made by the state authorities to sign a contract contemplating the appropriation of funds to carry on a county program. The city of Valley City had voted cooperation and funds but gave the state health department a release from its arrangements following the county commissioners' action of refusal to enter the program. This change results in Dr Elvin L Sederlin, former Fargo City health officer and lately district health officer at Valley City, being transferred to Bismarck.

## OHIO

**Annual Meeting to Be in Columbus**—The Ohio State Medical Association has decided to present an "old fashioned" three day annual session at Neil House, Columbus, May 9-11. A real medical assembly will be presented unless conditions resulting from the war become especially acute.

**New Tuberculosis Society**—The Cleveland Society of Tuberculosis Physicians was recently organized with Dr Raymond C McKay as president and Dr William F Hulse as secretary-treasurer. The purposes of the new group are to support the local antituberculosis program and to maintain high standards of treatment.

**Personal**—Rev J A Diekmann has resigned as superintendent of the Bethesda Hospital, Cincinnati, after serving as a member of the staff for thirty-two years. He has been succeeded by Albert N McGinnis, business manager, who will combine the positions of superintendent and business manager.—Dr and Mrs Hugh R Brownlee, Cleveland, observed their fiftieth wedding anniversary, November 7.

**Graduate Course**—The tenth annual postgraduate course of the University of Toledo, Toledo, was held November 5. This year the meeting was dedicated to the memory of the late Dr Francis W Alter, president of the Toledo Academy of Medicine in 1923. Speakers were Dr Lyman Weeks Crossman, New York, on "Refrigeration Anesthesia for Extremity Surgery," "Preservation of Traumatized and Devitalized Tissues," and "Case Reports—Operative and Nonoperative Treatment," and Dr William A Sodeman, New Orleans, "Medical Treatment for Peptic Ulcer," "The Protein Picture of Amebiasis" and "Management of the Nephritic Patient."

## TENNESSEE

**Society News**—The Middle Tennessee Medical Association was addressed at Mount Pleasant, November 11, among others by Dr Samuel S Riven, Nashville, on "Coronary Occlusion," Dr Amos Christie, Nashville, "Recent Advances in Immunization Procedures in Children" and Capt Frederick R Brown, M C, A U S, "Allergy in Relation to Flying." A symposium on burns was a feature of the meeting.—Dr Herbert Aeff, Knoxville, discussed "Carcinoma of the Cervix and Breast" before the Knox County Medical Society, November 23.



## TEXAS

**Personal**—Dr and Mrs David A Mann observed their fiftieth wedding anniversary in Beaumont, October 22 — Dr Augustus D Clovd Sr, Omaha, medical director of the Woodmen of the World, has been appointed acting superintendent of the Woodmen of the World War Memorial Hospital, San Antonio

**State Society Forms Speakers Bureau**—Fifteen Council Districts of the State Medical Association of Texas have selected a group of speakers under the direction of Dr Charles S Venable, San Antonio, to function as a speakers bureau, principally to combat socialized medicine. The men selected will be available by county medical societies for addresses before all groups of men or women

## VERMONT

**Personal**—Dr William J McNamara Fair Haven, has been elected supreme physician of the Knights of Columbus, in January Dr McNamara will take up residence in New Haven, Conn, national headquarters of the order

**University News**—Dr Louis S Goodman, professor of pharmacology and physiology at the University of Vermont College of Medicine, Burlington, addressed the Chittenden County Medical Society, December 2 on "The Advancing Frontiers of Medical Therapy." Dr William Dameshek, Boston, delivered the Osler Clinical Society Lecture at the university, November 9, on "Role of the Spleen in Disorders of the Blood." He also addressed the student body on "Etiology Diagnosis and Therapy of Anemias." Dr Douglas S Riggs, New Haven, Conn, gave an Osler Clinical Society Lecture, November 18, on "Biochemical Aspects of Thyroid Disease."

## WASHINGTON

**New Venereal Treatment Center**—Dr Fred W Harb, U S Public Health Service has been assigned as medical director of the new Seattle Treatment Center for women with venereal diseases. The Florence Crittenton Home will be leased by the society as a headquarters for the center

**Hospital News**—The Longview Memorial Hospital Longview, recently purchased by the Sisters of St Joseph, has been renamed the St John's Memorial Hospital. The hospital had been closed on July 1. December 1 was set as the tentative date for opening after alterations had been completed

**Society News**—Dr John F Fiorino, Everett was elected president of the Washington State Obstetrical Society at its meeting in Seattle, October 2, Dr David H Johnson, Tacoma, vice president and Dr Henry H Skinner Yakima, secretary-treasurer. Among the speakers at the dinner were Capt. Francis L McPhail, M C A U S, on "Further Observations on the Use of High Fluid Intake in the Treatment of Toxemias of Pregnancy" and Buell S Bindsheder, assistant surgeon, U S Public Health Service, reserve, "Caudal Anesthesia."—The Walla Walla Valley Medical Society, as guests of the Veterans Administration Facility, Walla Walla, was addressed in November by Drs James R Deagen on "Observations of the Kenny Treatment of Infantile Paralysis," Frederick B Nather, "Diagnostic Problems in Pulmonary Tuberculosis" and Ernest M Tapp "Food Poisoning" all of the Veterans Administration.—The King County Medical Society will be addressed January 3 in Seattle by Lieut. Comdr Walter L Voegtlin (MC), U S Naval Reserve, on "New Naval Hospital at Pearl Harbor (illustrated)" and Lieut. Comdr John P McVay (MC), U S Naval Reserve, "With the Marines in Guadalcanal"

## WEST VIRGINIA

**Basic Contract Adopted for Medical Service Plan**—The central state committee of the West Virginia State Medical Association and a group representing hospital service plans now operating in the state have agreed on a basic contract to be used by component societies in the application of regional nonprofit medical service plans (THE JOURNAL, October 16 p 430). No attempt was made by the committee to draft a contract that can be used in its entirety by county or area groups organized to provide medical service. Instead the committee has presented only a suggested form that can be amended or corrected to meet local needs, making it possible for one fee schedule suitable for one locality to be revised to meet conditions existing in another. The project to launch these regional nonprofit medical services was submitted to the council of the state medical association at its meeting of September 29 and approved the following day. They will be operated by group hospital service with the joint supervision of an advisory com-

mittee elected by the county medical society and a central state committee appointed by the state medical association. A number of component societies have already taken steps to organize their plans

## GENERAL

**Annual Forum on Allergy**—The sixth annual forum on allergy will be held at the Statler Hotel, St Louis, January 22-23. Fifteen study groups will be available to cover the various specialties, the program to include lectures, motion pictures, demonstrations, symposiums and panel discussions

**Hospital Warns Physicians of Fraudulent Staff Member**—St Vincent's Hospital, Los Angeles, writes that a person using the name "John E O'Malley, M D" has been traveling about the country obtaining loans of money under false pretenses. The hospital states that O'Malley claims to be in its pathologic department and presents engraved cards showing his name with the written identification of the hospital. The man is described as being small, dark and refers to himself as a "Filipino doctor," claiming to have had an Irish grandfather. He always appears to be well dressed and is apparently well educated. His story is usually plausible when he requests a loan, stating that he is temporarily out of funds. Inquiries from the New England states have been received by St Vincent's Hospital

**Mac Cahal Joins Southwestern Medical Foundation.**—Mac F Cahal, executive secretary of the American College of Radiology, Chicago, has been appointed executive officer of the Southwestern Medical Foundation, Dallas. Mr Cahal will take over his new work when his successor with the American College of Radiology has been selected. In 1937, after serving five years as executive secretary of the Sedgwick County Medical Society, Wichita, Kan, Mr Cahal filled a similar position with the newly created Inter-Society Committee for Radiology, representing the American Roentgen Ray Society, Radiological Society of North America, American Radium Society and the American College of Radiology. When this committee was discharged in 1939 he assumed his current position with the American College of Radiology

**Annual Meeting of Nutrition Foundation**—Grants totaling \$396,040 for research in nutrition have been made by the Nutrition Foundation, Inc, during the two years that the group has been in operation, it was announced at its second annual meeting in New York, November 12. These grants, providing for studies in many fields of nutrition and seeking improved living conditions through dietary advances have been made to forty one universities, medical centers and other research institutions throughout the United States and Canada, it was announced. The board of trustees at the meeting approved twelve new grants in aid amounting to \$29,900 and thirteen renewals of earlier grants amounting to \$36,000. The new grants include the following projects:

Paul R Burkholder Ph.D. Yale University New Haven Conn. nutrient values of soybeans  
Leopold R Cerecedo, Ph.D. Fordham University New York growth reproduction and lactation in rats on highly purified diets  
Max S Dunn Ph.D. University of California Los Angeles micro-biologic analysis of amino acids  
Paul F Hahn Ph.D. University of Rochester School of Medicine and Dentistry Rochester N.Y. absorption of iron compounds in anemia  
Robert S Harris Ph.D. Massachusetts Institute of Technology Cambridge Mass. the nutritive role of hydroxy fatty acids  
Howard B Lewis Ph.D. University of Michigan Ann Arbor experimental lathyrism (toxic vetches)  
Hubert S Loring Ph.D. Stanford University Calif., pyrimidine nucleosides or nucleotides as growth factors  
Dr De Witt Stetten Jr. Columbia University Morningside Heights N.Y. carbohydrate metabolism  
Dr Robert R Struthers McGill University Faculty of Medicine, Montreal Que. nutrition in relation to relapses in rheumatic fever  
Dr Josef Warkany University of Cincinnati College of Medicine diet and congenital malformations.  
Wilfred W Westerfeld Ph.D. and Albert B Hastings Ph.D. Harvard University Cambridge Mass. pyruvate metabolism

The Nutrition Foundation supported by the food industry as a contribution to the well being of the American public, has in its first two years received \$1,278,000 to carry on its work.

## PUERTO RICO

**Medical Society Encourages Reading**—The fourth annual meeting of the Asociacion Medica de Puerto Rico will be held in the assembly hall of the School of Tropical Medicine, San Juan, December 10-12. The association through its committee of library plans to establish an annual observance to be called "Day of the Book" to emphasize before medical and public populations the need of reading for educational purposes. On this day the daily press will publish book notice items of the most important books and the price of all volumes will be reduced for the day in the book stores. Donations of books to libraries will be made by individuals, scientific and other groups, book stores and literary societies.



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct 23, 1943

#### Control of Advertisements of Proprietary Medicines

Blatant claims to cure all sorts of diseases made in the newspaper advertisements of proprietary medicines have long been a scandal. At last, this practice is to be checked. The Newspaper Proprietors Association has unanimously adopted the following rules:

- 1 No advertisement will be accepted for any medicine or treatment which is claimed to be effective in Bright's disease, cancer, tuberculosis, diabetes, epilepsy, fits, locomotor ataxia, disseminated sclerosis, osteoarthritis, spinal, cerebral and venereal diseases, lupus or paralysis or for preventing any of these ailments, for the cure of amenorrhea, hernia, blindness, rheumatoid arthritis or any ailment of the auditory system, for procuring miscarriage, for the treatment of habits associated with sexual indulgence, or for any ailment connected with these habits.
- 2 No advertisement will be accepted from any advertiser who by printed matter, orally or in his advertisement, undertakes to diagnose any condition or to receive a statement of any person's symptoms with a view to advising or providing for treatment by correspondence.
- 3 No advertisement will be accepted containing a testimonial other than one limited to the actual views of the writer, or any testimonial given by a doctor other than a recognized British medical practitioner.
- 4 No advertisement will be accepted containing illustrations which are distorted or exaggerated to convey false impressions.
- 5 No advertisement will be accepted which may lead persons to believe that the medicine emanates from any hospital or official source, or is any other than a proprietary medicine advertised by the manufacturer for the purpose specified, unless the advertising agent submitting the copy declares that the authority of such hospital or official source has been duly obtained.

These rules are now in operation in all the London morning, evening and Sunday newspapers. Also all advertisements will be submitted to medical scrutiny and the products advertised to chemical analysis if this is considered necessary. This is the first time leading newspapers have unanimously laid down and insisted on a standard of control over claims made in advertisements.

#### Germans Bomb Another Hospital Ship

The latest German outrage in this war is the bombing of another hospital ship. Survivors of the hospital ship *Newfoundland*, which was set on fire by German bombs off Salerno on September 13 during the early stages of the battle there, have arrived at a Scottish port. At the time of the attack there were no wounded on board, but six nurses, all the doctors and the ship's officers—twenty-three in all—were killed. A dental surgeon escaped. The British seamen who were landed emphasized that, in accordance with the Geneva convention, the ship carried all her lights and could not have been mistaken for other than a hospital ship. The ship entered Salerno harbor to pick up the wounded but had not had time to embark any when German raiders launched heavy attacks on all shipping in the harbor. The ship was ordered to move out of the harbor, clear of other shipping. The attack which finished it came the next morning. All the lights were on, and the Red Cross was clearly visible. Twice raiders swooped down, and bombs fell. One plane came a third time and released an aerial torpedo which hit the deck. Fierce fires broke out and all the lifeboats on the port side were quickly ablaze. Orders were given to abandon

the ship, and efforts were concentrated on removing the sick, many of them stretcher cases. Only two lifeboats could be lowered, but other hospital ships came to the rescue. An attempt was made to take the *Newfoundland* in tow, but she could not be saved.

#### Gifts to Royal College of Surgeons

An immediate gift of \$500,000 for endowment of the department of pathology and the establishment of a chair of human and comparative pathology has been made to the Royal College of Surgeons by Mr. W. H. Collins, who has also made provision in his will for another \$500,000 for endowment of the department of anatomy and to establish a chair of human and comparative anatomy. His gifts are inspired by gratitude for recovery from a dangerous illness after three operations performed by the president of the college, Sir Alfred Webb-Johnson. Mr. Collins also wishes to help in the restoration of the buildings to their unique position in the surgical world after the grievous damage done by German bombs. The museum of the college, the greatest anatomic and pathologic collection in the world, was based on the famous collection of John Hunter. It is hoped that the new chairs of human and comparative anatomy and pathology will help to counteract the narrowing effect of specialization in present day research.

#### The Hospital Physicists Association

The latest association connected with medicine—the Hospital Physicists Association—recently held its inaugural meeting, which was attended by thirty-seven physicists from all over the country. The aim was to discuss a branch of scientific work which has grown up mainly in recent years. At the meeting Dr. H. T. Flint discussed technic with various radium gram units, Prof. F. L. Hopwood discussed betatron, Prof. Gilbert Stead, teaching for the diplomas, and Prof. Sidney Russ, professional equipment of a hospital physicist. Professor Russ stated that the first full time appointment of a hospital physicist was made thirty years ago. Today there are between fifty and sixty physicists engaged in hospital work or in medical research. It was arranged for meetings to be held at least three times yearly.

#### A Naval Surgeon's Bravery

With a gale blowing, Surg. Lieut. M. J. Hood risked his life by jumping from the ice covered deck of his ship to another to attend to 81 wounded. While his ship was on convoy escort duty last winter a signal was received from another escort ship asking for medical attendance for wounded. Weather conditions made it impossible to get boats away, and the only alternative was for one ship to go alongside the other. This was done, but owing to wind and swell it was dangerous for the ships to remain together for more than a few seconds. As the vessels, both covered with ice, closed, Hood jumped—an act which might have cost him his life. Then for thirty hours he worked unceasingly among the wounded. His operating table was the seamen's mess deck. To help him keep steady as the ship pitched and rolled, two men supported him as he worked. He has been awarded the D.S.C.

#### Grandson of Sir Thomas Barlow Appointed to His Hospital

Sir Thomas Barlow, pediatrician, has recently celebrated his ninety-eighth birthday. His grandson Dr. Andrew Barlow has just been appointed house surgeon to the Hospital for Sick Children, Great Ormond Street. It was at this leading British children's hospital that his grandfather did much of the pediatric work which made him famous.

## BUENOS AIRES

(From Our Regular Correspondent)

Oct 8, 1943

### New Laws on Preparation and Sales of Drugs

New laws have recently been passed in Argentina concerning the preparation and sale of drugs. A department for the control of specialized drugs and a national committee in charge of the enforcement of some of the laws were recently established. The new department and committee are organized under the National Department of Hygiene. The committee (Comision de Arancel y Contralor de Productos Medicinales) consists of members of the National Department of Hygiene, pharmacists and representatives of manufacturers of drugs and biologic products. All preparations will be under scientific control of the committee.

The salaries of professional men and women and technicians who prepare these products as well as salaries of other personnel in the field and the sales prices of the products will be determined by the board of directors of the committee. The salaries and prices are to be fixed in relation to the cost of the substances used in the products and the expenses of their preparation.

The profits for manufacturers and sellers are limited as follows: Twenty per cent based on the actual cost of the drug for manufacturers, 30 per cent for pharmacists and 13 per cent for drug stores. The percentages of profit will be calculated on a progressive scale in relation to costs. Importers will obtain a 6 per cent profit. The unit price of sale to the public will be declared on the containers of the drugs and must remain unchanged. The fixed prices will be uniform throughout the country. The greatest allowance for advertising expenses is 20 per cent of the total amount of all expenses. A 20 per cent reduction in the price of biologic preparations will be allowed to hospitalized patients, but the reduction is not allowed for other drugs. New specialized drugs of formulas similar to those of others previously registered are unacceptable. The scientific formula and therapeutic value of specialized drugs and specialized products which have been previously accepted will be reviewed for reapproval or rejection. Specialized biologic laboratories will be under the supervision of specialized physicians, veterinarians or biochemists who have been previously registered in the National Department of Hygiene, acting as technical directors. Information on the expenses of a product and the price wanted by manufacturers must be provided to the National Department of Hygiene together with drugs which are sent to the department for examination.

The commercial names given to the preparations may not indicate special effects of the drug on a given organic function. Words such as 'pure', 'very pure' and 'harmless' may not be used on labels to describe the drugs. Perishable preparations must have on outer and inner labels the dates of preparation and expiration of the proper therapeutic effect, as well as instructions in the necessary precautions for preservation. Sending free samples of specialized drugs to physicians is prohibited. In order to verify the therapeutic effect of new preparations, samples can be sent to public hospitals in the appropriate specialty. Manufacturers can obtain authorization from any hospital to have their products used in the hospital for six months.

The functions of the committee include: (1) obtaining information from manufacturers on the amount of drugs produced and imported and on the quality and perishability of drugs and products; (2) determining that specialized laboratories have the proper equipment; (3) prohibiting substitution of a given drug for another one in pharmacies and drug stores; and (4) supervising enforcement of the law. Offenders will be punished by the National Department of Hygiene according to national penal

laws or will receive orders from the department to close their laboratories and discontinue the manufacture and sale of their products. Advertising must be submitted to the National Department of Hygiene for approval. Drugs advertised as "infallible" or sold in unauthorized places are unlawful. Laboratories for clinical analysis have to be registered in the National Department of Hygiene, must meet the requirements and have the personnel demanded by the department and be supervised by the Bacteriologic and Chemical Institutes of Argentina, which are branches of the National Department of Hygiene.

### School of Nurses in Colombia

The National School for Nurses of the National University of Colombia is to be opened soon. It is to be supported by the government with the cooperation of the Pan American Sanitary Bureau, the Rockefeller Foundation and the Inter-American Cooperative Department of Public Health. The school will be under the auspices of the Ministry of Work, Hygiene and Social Aid and the National University. The first course will admit no more than 50 students having high school certificates. Scholarships are to be given to qualified students. The course of study and the school regulations will be prepared by the Ministry of Work and approved by the university. The course will consist of three years of study in physics, biologic and sociologic sciences, hygiene, sanitation, preventive and curative medicine, nursing and correlated studies. Miss Helen Howitt and Miss Johanna Schwarte were appointed by the Pan American Sanitary Bureau to teach nursing in Buenos Aires.

### Brief Items

The Ateneo of Medicine was founded in La Paz, Bolivia, two years ago. Weekly medical meetings and scientific medico-legal lectures to which professors of the various Latin American countries are invited take place regularly. Forty-five such meetings were held during the past year. Recently a medical week, the Jornadas Internas de la Institución, was observed. The Ateneo makes arrangements for postgraduate courses for its members in various universities in Pan American countries.

The hospital of the Academia Nacional de Medicina of Buenos Aires is to be constructed on a site of 10,000 square meters that the Bunge y Born Ltda. Company donated to the academy.

## Marriages

MARTIN OSMOND GRIMES, Newport, R. I., to Miss Elin Christine Nelson of Astoria, Long Island, N. Y., in August.

WILLIAM MEAD GRIFFIN, Hackensack, N. J., to Miss Shirley Mayfourth of Barrie, Vt., in New York, September 11.

ROGER WILLIAM BREYTSpraak to Miss Evelyn Lucille Grimm, both of Gilbertsville, Ky., in Benton, October 26.

WILLIAM ERNEST BRACKETT to Miss Sarah Louise Faulkner, both of Hendersonville, N. C. November 3.

LESLIE S. FREEMAN, Easton, Pa., to Miss Muriel Hilda Messinger of New York, in September.

GEORGE ALEXANDER CARDEN JR. to Miss Constance Seeger Sullivan, both of New York, recently.

GILES QUARLES GILMER, Lebanon, Va., to Miss Sue Wilson at Silver Springs, Md., October 18.

JAMES R. CASH, Charlottesville, Va., to Mrs. Mary Frazier Meade at Miquon, Pa., in October.

HORACE MILTON DALTON, Norton, Va., to Miss Lalla Lee Laffitte of Estill, S. C., August 10.

ANTHONY P. DONOHUE, Davenport, Iowa, to Miss Margaret McGivern at LeClaire, October 2.

MARIO D. CARO, Paterson, N. J., to Miss Max Aeenstra of Midland Park, recently.

JOHN W. GALSON, Butler, Pa., to Miss Margaret Hummel at New Holland, recently.

## Deaths

**Archibald Johnston Buist** ☉ Charleston, S. C., Medical College of the State of South Carolina, Charleston, 1896, since 1939 professor emeritus of gynecology at his alma mater, where he had formerly been professor of gynecology, professor of abdominal surgery and gynecology, professor of clinical and minor surgery and assistant instructor in pathology, bacteriology and histology and lecturer on minor surgery and bandaging, past president of the Charleston County Medical Society, member of the Southern Surgical Association and the Southeastern Surgical Congress, fellow of the American College of Surgeons, a founder member of the American Board of Surgery, at one time a member of the city board of health, formerly surgeon general of the South Carolina State Militia, chairman of the third district medical advisory board of South Carolina during the draft period of World War I and chairman of the local chapter of the American Red Cross, president of the board of trustees, Charleston Museum, visiting surgeon, and member of the board of commissioners, Roper Hospital, visiting surgeon to the Riverside Infirmary, Baker Memorial Sanatorium and St. Francis Xavier Infirmary, died September 12, aged 71, of coronary thrombosis.

**Herbert Maskell Goddard** ☉ Philadelphia, Medico-Chirurgical College of Philadelphia, 1905, assistant professor of otology at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania, member of the American Academy of Ophthalmology and Otolaryngology, founder of the Philadelphia Laryngological Society, fellow of the American College of Surgeons, served as assistant director of public health, county coroner, president of the board of trustees of the Eastern Penitentiary, otorhinolaryngologist, Philadelphia General Hospital, Jewish Hospital, Matilde Adler Loeb Dispensary, Home for Hebrew Orphans and the National Stomach Hospital, Philadelphia, and Eagleville (Pa.) Sanatorium for Consumptives, consultant, Nanticoke (Pa.) State Hospital, Eastern State Penitentiary Hospital and Shriners' Hospital for Crippled Children, died November 23, aged 63.

**Ralph Alvin Bowdle** ☉ East Ely, Nev., Medical College of Ohio, Cincinnati, 1909, a founder member of the American Board of Surgery, fellow of the American College of Surgeons and state chairman, International College of Surgeons, American Association of Industrial Physicians and Surgeons and the American Association of Railway Surgeons, past president of the Nevada State Medical Association and the White Pine County Medical Society, member of the state board of medical examiners, served during World War I, chief surgeon of the Steptoe Valley Hospital, Nevada Northern Railway and Nevada Mines division of the Kennecott Copper Corporation, a charter member of the Ely Rotary Club and a director of the Ely National Bank, died suddenly October 31, aged 59, of coronary occlusion.

**Frederick William Mitchell** ☉ Houlton, Maine, Baltimore Medical College, 1898, fellow of the American College of Surgeons, past president of the Maine Eye and Ear Association, at one time chairman of the medical advisory board of the southern Aroostook district, at one time a member of the Maine House of Representatives and state senator, member of the governor's council in 1939 and 1940, member of the Republican State Committee from 1934 to 1937, a director and vice president of the Houlton Trust Company and formerly chairman of the local school committee, a charter member and second president of the Rotary Club, surgeon and for many years president of the staff, Aroostook General Hospital, where he died September 5, aged 69, of Parkinson's disease.

**John Ernest Toye** ☉ Arlington, N. J., Dartmouth Medical School, Hanover, N. H., 1901, fellow of the American College of Surgeons, head of the orthopedic department of the board of education of Newark, a captain in the medical corps of the U. S. Army during World War I, served as chief surgeon, Hospital and Home for Crippled Children, Newark attending orthopedist, Hospital of St. Barnabas and for Women and Children, and St. Michael's Hospital, Newark, and West Hudson Hospital, Kearny, consulting orthopedist, Children's Country Home, Westfield, and the Betty Bacharach Home for Afflicted Children, Longport, a member of the board of directors of the First National Bank of Kearny, died September 17, aged 67, of coronary thrombosis.

**William Joseph Martin**, Davidson, N. C., University of Virginia Department of Medicine, Charlottesville, 1890, member of the Medical Society of North Carolina, adjunct pro-

fessor of science at the Davidson College, 1890-1891, Chambers professor of chemistry from 1896 to 1912, bursar from 1896 to 1899, proctor from 1908 to 1912, president from 1912 to 1929 and later president emeritus, instructor of chemistry at the University of Virginia from 1892 to 1896 and professor of sciences at the Presbyterian College, Clinton, S. C., 1888-1889, president of the General Assembly's Training School, Richmond, Va., from 1930 to 1933, died in Richmond, Va., September 7, aged 75, of pneumonia.

**Alva Lawrence Peekham** ☉ Poughkeepsie, N. Y., Hahnemann Medical College and Hospital of Philadelphia, 1899, specialist certified by the American Board of Pathology, Inc., member of the American Society of Clinical Pathologists, past president of the Dutchess County Medical Society and the New York State Association of Public Health Laboratories, secretary of the Dutchess County Health Association, secretary of the board of trustees of the Vassar Institute, for many years pathologist on the staff of the Vassar Brothers Hospital, where he died September 13, aged 68, of septic thrombophlebitis and secondary anemia.

**Haldor Barnes** ☉ Toledo, Ohio, Københavns Universitet Laegevidenskabelige Fakultet, Denmark, 1924, medical officer with the first Byrd antarctic expedition from 1928 to 1930, served in the medical corps of the Danish army for three years, formerly acting assistant surgeon, U. S. Public Health Service, at one time Marinette County (Wis.) physician, a member of the Gillette Clinic, died in the Robinwood Hospital September 12, aged 49, of cerebral hemorrhage.

**John Mason Blake**, Barton, Vt., University of Vermont College of Medicine, Burlington, 1898, past president of the Northeastern County Medical Society, died in the Orleans County Memorial Hospital, Newport, September 13, aged 68, of complications following an operation for strangulated umbilical hernia.

**J. Gaspard Boucher**, Woonsocket, R. I., School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1893, formerly city physician, a consulting member of the courtesy staff, Woonsocket Hospital, died September 21, aged 76, of bronchial asthma and cerebral hemorrhage.

**Robert J. Burns**, Freeport, Ill., Rush Medical College, Chicago, 1896, formerly health commissioner of Freeport, past president of the Stephenson County Medical Society, served on the staff of St. Francis Hospital, died September 15, aged 72, of myocarditis.

**William P. Callen**, Port Neches, Texas, Medical Department of Tulane University of Louisiana, New Orleans, 1888, died September 14, aged 84, of senility.

**Edward Thomas Carberry** ☉ Wharton, N. J., New York Homeopathic Medical College and Flower Hospital, New York, 1923, served during World War I, police surgeon, school physician, health officer and director of civilian defense, on the staff of the Dover General Hospital, died September 20, aged 45, of pulmonary embolism.

**John Lovell Cass** ☉ Kankakee, Ill., St. Louis University School of Medicine, 1904, for many years on the staff of the Kankakee State Hospital, died September 22, aged 63, of coronary occlusion.

**Albert Emery Chase**, Santa Ana, Calif., Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1907, member of the California Medical Association and the Radiological Society of North America, Inc., roentgenologist, Orange County Hospital, died September 15, aged 63, of carcinoma of the bladder.

**John S. Clark**, Ivanhoe, Va., University College of Medicine, Richmond, 1900, member of the Medical Society of Virginia, died suddenly September 25, aged 65, of heart disease.

**Lawrence Edward Clark** ☉ Ennis, Texas, University of Nashville (Tenn.) Medical Department, 1900, on the staff of the Ennis Municipal Hospital, member of the school board, died September 10, aged 67, of coronary thrombosis.

**Harry Edwards Clyde**, Evanston, Ill., Medico-Chirurgical College of Philadelphia, 1899, formerly on the staff of the Evanston Hospital, died September 3, aged 68, of carcinoma of the stomach.

**Lewis E. Cochran**, Peck, Mich., Western Reserve University Medical Department, Cleveland, 1891, member of the Michigan State Medical Society, health officer and a member of the school board, died September 2, aged 75, of cerebral hemorrhage.

**John Milton Colley**, Palestine, Texas, University of Georgia Medical Department Augusta, 1881 past president of the Anderson County Medical Society, formerly city and county health officer, died September 30, aged 88, of arteriosclerosis

**Chandos Burton Conner**, Boston, College of Physicians and Surgeons, Baltimore, 1895, died September 15, aged 69, of congestive heart disease

**Nielson Pharr Coppedge**, Candor, N C North Carolina Medical College, Davidson, 1903, died September 26, aged 63

**Harley Franklin Davis**, Miami, Fla., St. Louis University School of Medicine, 1924 member of the Florida Medical Association, served during World War I first lieutenant in the medical reserve corps of the U S Army, assigned to the 76th Coast Artillery at Fort Bragg N C honorably discharged because of physical disability on April 29, 1942 died in the Jackson Memorial Hospital October 16, aged 44, of extradural hematoma and skull fracture received in a fall

**Merrill B Dean**, Candor, N Y University of Pennsylvania Department of Medicine, Philadelphia, 1894, president of the village and health officer, died in a hospital at Miami, Fla., September 5, aged 73, of arteriosclerosis

**Wright Wiley Diamond**, Magee, Miss St. Louis College of Physicians and Surgeons, 1919, member of the Mississippi State Medical Association owner and medical superintendent of the Magee General Hospital, formerly assistant superintendent Mississippi State Charity Hospital Jackson, died September 13 aged 64 of coronary thrombosis

**Richard Maxwell Fancher**, Napa Calif., University of Nashville (Tenn) Medical Department 1911 served during World War I died in September aged 59

**Henry Elmer Fernald** East Boothbay Maine, Dartmouth Medical School, Hanover, N H 1894 health officer of the town of Boothbay died September 15 aged 77, of hemorrhage due to ruptured aneurysm

**Jacob B Feuerstein**, Atlantic City N J Baltimore University School of Medicine, 1892, served during World War I, formerly on the staff of Mount Sinai Hospital, Philadelphia died September 17, aged 84, of acute dilatation of the heart, general arteriosclerosis and chronic myocarditis

**John Lake Fortson**, Tecumseh Okla University of Texas School of Medicine, Galveston, 1909, member of the Oklahoma State Medical Association, served during World War I city and county physician, physician in the Shawnee Indian Agency for many years, died September 9, aged 67

**John Rollin French**, Los Angeles University of Southern California College of Medicine, Los Angeles, 1906, member of the California Medical Association formerly owner and superintendent of the Golden State Hospital, died September 28, aged 63 of coronary heart disease

**Hamilton Redd Frye**, Beallsville Pa Jefferson Medical College of Philadelphia, 1882, died September 6, aged 87, of chronic endocarditis

**John Wesley Gallagher** Perry N Y, University of Pennsylvania School of Medicine Philadelphia, 1923 diplomate of the National Board of Medical Examiners, decorated with the Purple Heart for gallantry in action for his service with the American Expeditionary Forces in France during World War I, health officer for the towns of Perry and Covington, county coroner member of the library board and Rotary Club died in the Wyoming County Community Hospital Warsaw, September 18 aged 46 of leukemia

**Franklin D Garrett**, Denton, Texas Baltimore Medical College 1898 member of the State Medical Association of Texas, died in September, aged 67

**John Andrew Gartlan**, Paden City W Va Medical Department of Western University of Pennsylvania, Pittsburgh, 1906 died September 6, aged 64 of arteriosclerosis and gangrene

**William Robert Grady**, Meridian Miss. Atlanta School of Medicine 1911 member of the Mississippi State Medical Association, veteran of the Spanish American War died in Rush's Infirmary September 4, aged 64 of cerebral hemorrhage

**Edwin Wakefield Grubb** Akron Ohio Cleveland Homeopathic Medical College 1903 on the staffs of Peoples and St Thomas hospitals died September 23, aged 73 of angina pectoris

**Albert John Guerinet** Pittsburgh University of Louisville (Ky) School of Medicine, 1912 member of the Medical Society of the State of Pennsylvania senior attending surgeon

and attending bronchoscopist on the staff of St. John's General Hospital, a member of Phi Chi Medical Fraternity, author of articles on the eye and ear, died in the Suburban General Hospital, Bellevue, September 18, aged 56

**William Alonzo Harvey**, San Carlos, Calif., California Medical College, San Francisco, 1888, St. Louis College of Physicians and Surgeons, 1895, at one time a member of the board of health of San Francisco, died in a San Mateo hospital September 1, aged 75, of carcinoma of the throat

**Nicholas Edward Hausmann** Kewaskum, Wis., Rush Medical College, Chicago, 1899, past president of the Washington Ozaukee Counties Medical Society, health officer, died September 13, aged 68, of arteriosclerosis

**Kenneth Philip Henderson** Pleasantville, N J, Temple University School of Medicine, Philadelphia, 1933, urologist, Shore Memorial Hospital, Somers Point, where he died September 10, aged 34, of chronic glomerular nephritis with hypertension and chronic appendicitis

**Oliver Ernest Hensley** Herculaneum, Mo St. Louis University School of Medicine, 1903, past president of the Jefferson County Medical Society, past president of the board of education of Herculaneum, died September 15, aged 68, of heart disease

**Edward John Hill**, Eureka, Calif., University of California Medical Department, San Francisco, 1894, died in the Humboldt County Hospital September 15, aged 77, of cerebral hemorrhage

**Max S Hirschfield**, Duluth, Minn., Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1902, member of the Minnesota State Medical Association, on the staffs of St. Mary's and St. Luke's hospitals died in Beverly Hills, Calif., September 4, aged 76, of acute heart disease

**Samuel A Myers Hubbard** Ridge Farm, Ill., Loyola University School of Medicine, Chicago, 1916, past president of the Vermilion County Medical Society, served during World War I, member of the Selective Service Board number 2 of Vermilion County, company surgeon for the Nickel Plate Railroad on the courtesy staffs of St. Elizabeth and Lake View hospitals, Danville, died September 9, aged 54, of cerebral thrombosis

**Erastus Mead Hudson**, Washington, D C Columbia University College of Physicians and Surgeons, New York, 1917 senior medical officer, Federal Trade Commission, an honorary surgeon in the New York City police department, served in the medical corps of the U S Navy, died in the Veterans Administration Facility September 12, aged 55 of chronic nephritis

**Charles Warren Hunter**, Port Byron Ill., Rush Medical College, Chicago, 1894, served during World War I, died September 4, aged 73, of cerebral hemorrhage

**Charles Bruce Irwin** Chicago, University of Maryland School of Medicine, Baltimore, 1904 clinical assistant in medicine at the Northwestern University Medical School, vice president and medical director of the North American Life Insurance Company, died September 21 aged 62, of heart disease

**Charles Edgar Kahle**, Oklahoma City Medical College of Indiana, Indianapolis 1897, a member of the chamber of commerce and Rotary Club, died September 15, aged 76

**William Frederick Keck**, Brownsville, Pa Jefferson Medical College of Philadelphia, 1920 member of the Medical Society of the State of Pennsylvania on the staff of the Brownsville General Hospital died in the Mercy Hospital, Pittsburgh, September 8, aged 44 of carcinoma of the stomach

**Sylvester Carl Kehl** Chicago University of Illinois College of Medicine, Chicago 1919 for many years pediatrician for the Infant Welfare Board of Health served during World War I, major, medical reserve corps U S Army not on active duty, on the staff of the Holy Cross Hospital, died in the Evangelical Hospital September 23, aged 48 of cerebral hemorrhage

**Abraham Ober Kleiman** Hartford Conn., Tufts College Medical School Boston 1933 died in the Peter Bent Brigham Hospital Boston September 12 aged 35 of leukemia

**Royal Estabrook LaGrange**, Fort Ann N Y Albany Medical College, 1912 health officer, formerly physician for the Great Meadow Prison Comstock served on the staff of the Albany Hospital died in the Glens Falls Hospital September 4 aged 59 of coronary thrombosis



**Corvus Council Lang**, Des Moines, Iowa, St. Louis College of Physicians and Surgeons, 1893, served during World War I, died in the Veterans Administration Facility, Hines, Ill., September 14, aged 72, of chronic cholecystitis, cholelithiasis and coronary heart disease

**Edwin S. Leach**, Junction City, Kan., Ensworth Medical College, St. Joseph, Mo., 1894, died in the Junction City Municipal Hospital September 15, aged 76, of nephritis

**Joseph Milton Levine** @ Brooklyn, Cornell University Medical College, New York, 1922, on the staff of the Beth Moses Hospital, died in the Triboro Hospital, Jamaica, N. Y., September 21, aged 45, of tuberculosis

**George Henry Lewis**, Lakewood, Ohio, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905, member of the Ohio State Medical Association, on the visiting staffs of the Fairview Park and St. John's hospitals, Cleveland, and the Lakewood Hospital, died September 28, aged 67, of chronic myocarditis and cardiovascular disease

**Harry Chamberlain Low**, Hanover, Mass., Harvard Medical School Boston, 1899, formerly on the staffs of the Massachusetts General, Boston City and the Children's hospitals, all of Boston, for two years a member of the department of tuberculosis, Massachusetts State Department of Public Health, died September 13, aged 72, of cerebral embolism

**Wilfred Francis Lowe** @ Jackson, Calif., Rush Medical College, Chicago, 1930, served as city physician and as a member of the board of trustees of the grammar school district, on the staff of the Mercy Hospital, Sacramento, where he died September 11, aged 40, of an accidental gunshot wound

**Thomas Donald MacRossie**, Copiague, N. Y., University of the City of New York Medical Department, 1897, served during World War I, died in the Veterans Administration Facility, New York, September 1, aged 71, of arteriosclerosis and heart disease

**James Albert McClure** @ Columbus, Ohio, University of Wooster Medical Department, Cleveland, 1881, on the staffs of the Grant and White Cross hospitals, died September 10, aged 88, of acute endocarditis

**John Henry McCormick**, Mobile, Ala., National University Medical Department, Washington, D. C., 1891, member of the Medical Society of the District of Columbia, president of the White County Tuberculosis Sanitarium, died September 15, aged 73, of heart disease

**Henry Madison McCracken**, Argos, Ind., University of Louisville (Ky.) Medical Department, 1907, member of the Indiana State Medical Association, died September 11, aged 70, of cerebral hemorrhage

**Oscar Lee McFadyen Sr.**, Fayetteville, N. C., North Carolina Medical College, Charlotte, 1912, member of the Medical Society of the State of North Carolina, secretary and past president of the Cumberland County Medical Society, a secretary-treasurer of the Fifth District Medical Society, a member of the Rotary Club, died September 26, aged 52, of coronary sclerosis

**John Newton McGrath**, @ St. Louis, St. Louis University School of Medicine, 1920, on the staff of St. John's Hospital, where he died September 21, aged 48, of heart disease

**Charles Havelock Beverly Meade**, Stamford, Conn., University of Louisville (Ky.) Medical Department, 1902, member of the Connecticut State Medical Society, a member of the associate staff of the Stamford Hospital, died September 6, aged 65, of arterial hypertension and cardiac decompensation

**Joseph Edward Miller** @ Los Angeles, Wisconsin College of Physicians and Surgeons, Milwaukee, 1912, specialist certified by the American Board of Otolaryngology, member of the American Academy of Ophthalmology and Otolaryngology and the Pacific Coast Oto-Ophthalmological Society, fellow of the American College of Surgeons, formerly instructor in otolaryngology at the College of Medical Evangelists, on the staff of the Santa Monica Hospital, died, September 13, aged 54, of coronary disease

**William R. Miller**, Brownsville, Tenn. (licensed in Tennessee in 1912), died in the Haywood County Memorial Hospital September 6, aged 53

**Charles Weston Morey**, Detroit Trinity Medical College, Toronto, Ont., Canada, 1890, died September 30, aged 87, of pneumonia

**John A. Moore** @ El Dorado, Ark., Memphis (Tenn.) Hospital Medical College, 1898, first vice president of the Mid-South Medical Association, secretary of the staff of the Warner Brown Hospital, died in St. Joseph's Infirmary, Hot Springs National Park, September 9, aged 70, of coronary occlusion

**William Nagin**, Brooklyn, Long Island College Hospital, Brooklyn, 1913, on the staff of the Unity Hospital, died in the Long Island College Hospital September 19, aged 59

**Samuel D. Nevling**, St. Louis (licensed in Missouri in 1896), died September 23, aged 77, of myocardial failure

**King Allen Norris**, Columbus, Ohio, Ohio Medical University, Columbus, 1898, died September 4, aged 72

**Edward Sylvester Norton**, Brooklyn, Long Island College Hospital, Brooklyn, 1908, formerly director of the chamber of commerce of Flatbush, died September 21, aged 67

**Samuel Joseph Ottinger**, Philadelphia, Jefferson Medical College of Philadelphia, 1892, member of the Medical Society of the State of Pennsylvania, died September 15, aged 80

**George Philo Pitkin** @ Bergenfield, N. J., Albany (N. Y.) Medical College, 1908, fellow of the American College of Surgeons, on the staff of the Holy Name Hospital, Teaneck, where he died September 3, aged 58, of acute appendicitis with local peritonitis and pneumococcal bronchopneumonia

**William Pinkney Reeves** @ Washington, D. C., Georgetown University School of Medicine, Washington, 1899, formerly clinical professor of surgery at the George Washington University School of Medicine and at his alma mater, died September 11, aged 72, of angina pectoris

**James Lee Rogers**, Spokane, Wash., University of Minnesota College of Medicine and Surgery, Minneapolis, 1905, member of the Washington State Medical Association, fellow of the American College of Surgeons, died suddenly September 3, aged 65, of coronary occlusion

**John Randolph Rogers** @ Grand Rapids, Mich., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1895, past president of the Kent County Medical Society, for many years president of the Grand Rapids Association for the Blind and for Sight Conservation, fellow of the American College of Surgeons, on the staff of the Butterworth Hospital, died September 10, aged 74, of heart disease

**William Roush**, Lima, Ohio, Cincinnati College of Medicine and Surgery, 1891, fellow of the American College of Surgeons, radiologist at St. Rita's Hospital and the Lima Memorial Hospital, where he died, September 11, aged 78, of aplastic anemia



LIEUT. COMDR. MALCOLM L. PRATT  
(MC), U.S.N.R., 1891-1942

### KILLED IN ACTION

**Malcolm Lewis Pratt** @ Bellefonte, Ohio, Jefferson Medical College of Philadelphia, 1914, a founder member of the American Board of Surgery, served with the Fifth Marine Regiment during World War I and was awarded the Navy Cross, citations from the United States government and a French decoration, commissioned a lieutenant commander in the medical corps of the U. S. Naval Reserve on March 29, 1941, regimental surgeon of the Fifth Marine Regiment at New River, N. C., reported missing in action, Aug. 13, 1942, while attached to the First Marine Division, Fleet Marine Force, when certain personnel failed to return from a reconnaissance patrol near Matankau Village, Guadalcanal, Solomon Islands, aged 51, officially declared dead by the Navy Department Aug. 14, 1943



## Bureau of Investigation

### SOME MISCELLANEOUS MEDICAL FRAUDS

#### A Variety of Schemes Debarred from the Mails

Fraud orders issued by the Post Office Department have frequently been the subject of extensive articles by the Bureau of Investigation in these pages of THE JOURNAL. Following are abstracts of some fraud orders not dealt with previously.

**"Dr." D K Tucey D K Tucey Herb Company and Tucey Chinese Herb Company**—The D K Tucey who does business from Los Angeles under these names has long advertised himself as a Chinese Herbalist offering a Chinese Remedy for ulcers, eczema and fistula and various herbal "cures" for a variety of disorders including tonsillitis catarrh asthma colds appendicitis epilepsy kidney and bladder complaints neuritis rheumatism and some twenty other conditions. As long ago as December 1924 the California state licensing board had Tucey arrested on the charge of violating the state medical practice act and on his plea of guilty to the charge he was fined \$1,000 in a local court. Nevertheless his herbal business seems to have thrived until the Post Office Department learned that Tucey solicited through the mails remittances for his Chinese herbs "representing that these would cure tuberculosis rickets cancer gall stones, syphilis gonorrhea and (with the assistance of his salve) pellagra. Accordingly that Department notified Tucey to show cause why a fraud order should not be issued against the business but neither he nor any one representing him appeared at the hearing. Government witnesses testified that Tucey's real name was Loy S. Tucey and that he had come to this country from China in 1904 conducted his herb activities since 1912 had storage room for more than 1,000 different kinds of herbs and admitted that his office sales amounted to \$300 a month and those by mail to about \$400. It was further shown that Tucey claimed to have studied herbs both in China and in America and thus to be qualified as a herbal doctor to select a proper treatment for any disease he diagnosed" after reading the symptoms described by his customers in their letters. His literature included a book, *Health Through Nature—How to Obtain and How to Keep It*. The government's expert medical witness testified as to various diseases for which Tucey prescribed his herbs but which they could in no sense cure. In consequence of all the evidence presented a fraud order closing the mails to this scheme was issued on May 22, 1943 against the trade styles D K Tucey Dr D K Tucey D K Tucey Herb Company and Tucey Chinese Herb Company.

**F O Redfield**—This person and his psoriasis cure business have been known to the American Medical Association since 1931 when he was promoting one such treatment from Woodside Long Island, N. Y. According to a government investigator Redfield claimed that he discontinued his mail order business from 1931 until 1942 when he resumed it at Wilmington, Del. Redfield's circulars claimed that by studying diet he cured himself and a friend of psoriasis. His "method" could be learned from his book, *How I Rid Myself of Psoriasis*, price \$17.50 which to hesitant prospects was sometimes gradually reduced to \$3.00. In addition to diet rules the book advised taking an enema of warm water and castile soap every night before retiring. After due investigation the Post Office Department summoned Redfield to a hearing in Washington on charges of fraud. A specialist in skin diseases testified for the government on the causes and scientific treatment of psoriasis and showed that it would be impossible for a layman accurately to diagnose a case of psoriasis since that condition might easily be mistaken for the various types of eczema and other skin diseases and that only the medical profession, by laboratory microscopic analysis could definitely identify psoriasis. Further he stated that the medical profession had experimented extensively with the use of diets in treating psoriasis and had found them worthless. He testified specifically that the diet recommended in Redfield's booklet would be useless in treating psoriasis and that neither the laxatives described in the book nor the elimination of coffee from the diet would benefit the patient. Redfield in his own defense represented that his book was intended only to relate the method or means by which he rid himself of psoriasis and that in it he nowhere claimed that it would cure any other person afflicted with psoriasis. Since he was unable to disprove the charge that he was conducting a fraudulent scheme, the mails were closed to him under a fraud order issued July 15, 1943 against the trade styles F O Redfield and "F O R."

**G B Taylor M.D.**—At Cameron, Texas Dr. Green Benjamin Taylor practices as a specialist in eye ear nose and throat disorders. Dr. Taylor was graduated from Memphis Hospital Medical College Memphis Tenn. in 1900 and licensed to practice in Texas by the Act of 1907. He is reported to be a member of his local medical society but not a Fellow of the American Medical Association. In addition to his practice Dr. Taylor for a time was engaged in selling through the mails a preparation called *Orine* for deafness head noises and other hearing disorders besides *Nerve and Kidney Tablets* for various diseases and ailments. After the Post Office Department had investigated the business it notified Dr. Taylor to appear for hearing before that Department in Washington on May 20, 1941 and show cause why a fraud order should not be issued against his enterprise. Thereafter it is reported Dr. Taylor offered to discontinue it entirely. In the latter part of 1942 however the Post Office Department undertook a second investigation of the scheme after obtaining evidence that Dr. Taylor was again offering treatments for deafness and head noises through the mails. It was learned that in answering one inquirer, Dr. Taylor pointed out that he had been secretary of his county medical society for 25 years and at other times its president, as well as president of the district medical society vice-president of the state medical association and a Fellow of the American Medical Association for many years besides operating his private hospital

and attending the various ear hospitals in Chicago for many years. His letter went on to discuss the anatomy of the ear and to solicit an order for his *Two Way Prescriptions*—\$3.00 down and an additional later payment of \$2.00 if the customer was satisfied. One person who sent the money received in return a so-called "Ear Prescription" and an "Ear Nose Prescription". The first of these called for 8 grains each of bicarbonate and bicarbonate of sodium and ½ ounce each of distilled water and glycerin to be placed in each ear for three successive nights and washed out on the fourth day, once a week for three weeks to soften and dissolve ear wax in the outer ear canal that does cause deafness and noises. The "Ear Nose Prescription" called for 2 grains each of menthol and gum camphor and 2 ounces of chlorotone inhalant, sprayed into the nose night and morning to relieve "catarrhal inflammation." There was added the comment "You should feel your ears pop when blow as directed." Dr. Taylor also played up a "Three Way Prescription" which apparently differed from the "Two Way" variety in that a third mixture was recommended under the name *Nerve Prescription*. This called for "Prostigmin Bromide Tablets 15 Mg. as No. 20" and directed the user to take one tablet at night to "relieve and relieve [sic] the auditory nerve that can be causing deafness [sic] and head noises." At the hearing of the case an expert medical witness for the government testified that, among other things deafness and head noises are due to a number of causes, which he detailed and went on to show that Dr. Taylor's "treatment" would not be effective in most ear and nose disorders and in some cases might actually be harmful. He further testified that prostigmin bromide, the only drug contained in the *Nerve Prescription* would tend merely to tone up the muscles and would not and could not overcome deafness head noises or their numerous causes. Although the brief filed by Dr. Taylor as an answer to the charges denied that the *Ear Prescription* as now sold was identical with *Orine* which he formerly purveyed, the expert testimony introduced by the government at the hearing showed that both were composed mainly of glycerin and that their effect was merely to soften and make easier the removal of ear wax. Again though Dr. Taylor's brief contended that prostigmin bromide contained in his so-called *Nerve Prescription* had been used successfully in the treatment of deafness both by himself and by many other ear specialists attending the larger hospitals in the east, he submitted no evidence whatever other than his own statement in support of these contentions and even admitted that he himself had been slightly deaf with head noises and atrophic rhinitis for several years. The outcome of the hearing was a fraud order issued by the Post Office Department April 9, 1943, against Dr. G. B. Taylor.

**Menade Products and T. E. Bonestell**—Bonestell was manager of the concern known as Menade Products Pasadena Calif. which sold tablets under the name "Menade" by mail. It represented that the product, when used as directed would restore sexual vigor and pep and mainly virility to every man lacking these attributes renew "normal functioning of the male glands and give 'bondless health' to persons suffering from physical disabilities. Following up some complaints, the Post Office Department investigated the scheme and eventually charged Bonestell with fraud. He neither put in an appearance at the hearing nor was represented by counsel. A chemist testified for the government that each Menade tablet contained talc and chalk (mostly in the coating) 0.15 grain of iron and a negligible amount of organic iodine, plus some glandular matter yeast small amounts of phosphoric pentoxide (P<sub>2</sub>O<sub>5</sub>) presumed to be from the glandular matter and traces of sulfate sodium chloride and potassium. The witness added that the claimed vitamins might be present. A physician testified for the government that a lack or lessening of sexual power or vigor is due primarily to old age and general decadence of the tissues throughout the body including those of the glands, and that chronic ailments or psychic disturbances may be contributing factors. His testimony further showed that Menade would not and could not restore sexual vigor and pep and mainly virility to every man lacking therein or bring back normal functioning of the male glands as claimed. Accordingly a fraud order was issued on May 14, 1943 debaring Menade Products and T. E. Bonestell Manager from further use of the mails.

**Peptonik Mineral Company and J. T. Atkinson**—J. T. Atkinson was reported to be the proprietor of the business at Huntsville, Ala. The Post Office Department ordered the concern to show cause why a fraud order should not be issued. Neither the respondents nor their legal counsel put in an appearance at the hearing. They were given until June 1, 1943 to submit whatever brief or argument they desired. They simply returned the transcript without any accompanying reply. The Post Office memorandum on the case charged that the concern sold *Peptonik Mineral* through the mails under claims that, when used as directed it would overcome arthritis kidney and bladder trouble gallstones high blood pressure weak heart stomach trouble pellagra eczema prostate disorder and any sore or skin disease regardless how old it might be or the cause thereof that the product when used as directed would be more effective in the treatment of the disease and conditions for which it is sold than any other known treatment that it would obviate the necessity for needed surgical operations and that, when taken according to directions it would produce results identical with or similar to those described in the testimonial letters that were embodied in the advertising. At the hearing a government chemist summarized his analysis of the product by testifying that the mixture was just a preparation of iron with traces of these other minerals. The government's expert medical witness testified that the iron or ferric sulfate was the only drug in the product which would have any substantial therapeutic effect and that even so ferric sulfate is not recognized as a proper drug for internal use because of its irritant effect and because there are other forms of iron much more useful and not so irritant to the stomach and teeth. This witness further testified that *Peptonik Mineral* would not be an effective treatment for rheumatism arthritis or the other disorders for which it was recommended. Accordingly the *Peptonik* concern and J. T. Atkinson were found to be conducting a scheme for obtaining money through the mails by means of false and fraudulent pretenses representations and promises and a fraud order debaring them from the mails was issued on June 23, 1943.

## Correspondence

### THE PRESENT DAY STATUS OF CAUDAL ANESTHESIA IN OBSTETRICS

*To the Editor*—In an attempt to forestall any possible decline in the popularity which caudal anesthesia, both the single injection and the continuous injection variety, have attained, this statement weighing the advantages and disadvantages of each is presented

Differences of opinion as to the merits of single injection caudal and continuous caudal prevail among the advocates of caudal anesthesia. Each has its place, dependent on the facilities and training of the personnel. The following points are listed to enable an impartial comparison of the two

1 The indications, contraindications and preanesthetic preparation of the patient are the same for the two types of caudal anesthesia. The obstetrician or the trained assistant administering caudal anesthesia must be constantly on guard against complications

2 The single injection caudal anesthetic may be given by the obstetrician or the trained assistant just prior to the termination of the second stage of labor, while the continuous caudal analgesia and anesthesia may be given by the obstetrician or the trained assistant during the first stage of labor and controlled by a trained assistant throughout labor and delivery

3 The likelihood of an intrathecal or an intravenous injection of the anesthetic solution is less with single injection caudal anesthesia because the needle is introduced into the sacral canal just far enough to insure proper distribution of the anesthetic solution and is well within the limits of safety. In continuous caudal anesthesia inadvertent intrathecal or intravenous injection of the anesthetic solution is possible since the needle is introduced up to its hilt (2½ to 3 inches) and is left in place, accidental movement of the needle collar might result in puncture of the dural sac or a vein

4 There is less quantity of anesthetic solution needed with single injection caudal anesthesia since the second stage of labor is well advanced at the time of the administration of the anesthetic. Under continuous caudal anesthesia a greater quantity of anesthetic solution is needed since analgesia and anesthesia are developed and maintained from early in the first stage of labor

5 In single injection caudal anesthesia a stiff needle is used, needle breakage is practically nil. In continuous caudal anesthesia malleable needles are used of necessity and if the same needle is used too often it may break, however, needle breakage is practically nil

6 The introduction of the stiff needle into the sacral canal as used for single injection caudal anesthesia is easier than the insertion of the malleable needle into the sacral canal as used for continuous caudal anesthesia

7 The chance for infection at the site of the needle insertion is slight with single injection caudal anesthesia, there being a minimum of trauma present since but a single injection is made, the needle withdrawn and the area sealed. The chance for infection at the site of the needle insertion is increased with continuous caudal anesthesia since the needle must be left in place for several hours, during which time the site of injection may be contaminated as the result of its location, the needle may become maladjusted (motion in and out resulting in contamination) as the result of inadvertent movements of the patient, trauma of tissues may develop from needle pressure when the patient is in the supine position for any great length

of time and there may be unintentional contamination of the tubing, syringe and anesthetic solution during a prolonged period of maintaining analgesia and anesthesia

8 No special equipment is needed for single injection caudal anesthesia, while special instrumentarium as devised by Drs Hingson and Edwards and others who have modified the technique is needed for continuous caudal analgesia and anesthesia

9 In both methods of caudal anesthesia the percentage of failure is directly proportional to the skill and judgment of the operator

10 Under single injection caudal anesthesia the patient may be given adequate sedation (barbiturates, morphine or scopolamine) during the first and second stages of labor and the anesthetic administered for the termination of the second stage of labor. On the other hand, with continuous caudal anesthesia, as analgesia and anesthesia are maintained throughout the major portion of the entire labor, sedation is unnecessary but may be given in small quantities if desired

11 In single injection caudal anesthesia untoward reactions are apparently nil if the patient is under mild sedation (barbiturate). Untoward reactions may be expected with continuous caudal anesthesia unless the patient is given a small quantity of sedation (barbiturate) prior to the administration of the anesthetic. However, in any event, untoward reactions are infrequent

12 Under single injection caudal anesthesia, malpresentations do not develop as a result of the anesthesia. Malpresentations may develop under continuous caudal anesthesia as a result of prolonged pelvic floor relaxation. However, the correction of malpositions is greatly facilitated by the profound pelvic and perineal floor relaxation characteristic of either type of caudal anesthesia

13 Precipitate deliveries do not occur under either type of caudal anesthesia

14 Spontaneous deliveries in primiparas are infrequent under either type of caudal anesthesia. However, spontaneous deliveries may occur in multiparas not infrequently under either type of caudal anesthesia if voluntary effort is encouraged at the time of uterine contraction

15 The blood loss in the third stage of labor is definitely lessened under either type of caudal anesthesia

16 Rest, diet and hydration of the patient must be watched throughout the course of labor if a patient is to receive single injection caudal anesthesia. However, rest, diet and hydration offer little or no problem when a patient receives continuous caudal analgesia and anesthesia since the parturient is comfortable and willingly partakes of food and drink during the course of her labor

17 There is less apt to be a fall in blood pressure with small single injection caudal anesthesia, although a fall in blood pressure may be evidenced with the large single injection of anesthetic solution. Under continuous caudal analgesia and anesthesia there is a slight fall in the blood pressure

18 Since single injection caudal anesthesia is not given for the first stage of labor but only when the termination of the second stage of labor is imminent, there is no danger of interfering too early with the second stage of labor. As continuous caudal analgesia and anesthesia shortens the first stage of labor but prolongs the second stage, interference with the second stage of labor too early must be avoided

19 The variety of operative procedures needed in the complicated delivery may be performed with facility under either type of caudal anesthesia. However, continuous caudal analgesia has a distinct advantage in the unexpectedly prolonged operative case. The incidence of outlet forceps definitely is increased under either single injection or continuous caudal anesthesia

20 No deleterious effects have been noted on the fetal heart tones or the response of the fetus at the time of delivery under

Dr Thurston Scott Welton, director of the Obstetrical and Gynecological Service, Greenpoint Hospital, Brooklyn, permitted this communication to be submitted from his service. The author has since been commissioned Assistant Surgeon (R) in the U S Public Health Service. This article has been approved for publication by Dr Thomas Parran, Surgeon General, U S P H S

single injection caudal anesthesia. Fetal distress has not been evidenced under continuous caudal analgesia and anesthesia although, should the drop in maternal blood pressure be more than the usual drop expected (20 mm of mercury), fetal distress will be reflected and if the fall in blood pressure is inadvertently prolonged it will be deleterious to the fetus.

21 Postpartum complications such as urinary difficulty or subinvolution of the uterus are rarely encountered, in fact, the postpartum course actually seems expedited with the use of either variety of caudal anesthesia.

Caudal anesthesia, like any innovation, can be used feasibly only by those adequately trained; it is not possible for continuous caudal analgesia and anesthesia to be used without the aid of a trained assistant. In many instances, since the element of time plays an important role, the accoucheur may choose to use single injection caudal anesthesia for termination of the second and third stages of labor. Emphasis should be placed on the fact that the administration of caudal anesthesia is technically difficult.

Some physicians have attempted caudal analgesia and anesthesia without having sufficient knowledge of anatomy or the dangers which accompany such a major procedure, the administration of which is technically more difficult than would appear on the surface. This, if it continues, will result in constantly increasing failures, accidents of technic morbidity and even mortality which in all likelihood will discourage its use.

There are fads in medicine just as there are in fashion, but a fad becomes an established method of procedure when it is built on a firm foundation of scientific investigation. Caudal anesthesia is of unquestionable value and if given a sound scientific trial, will assume its proper position among accepted procedures.

ROBERT M. MITCHELL, M.D., Brooklyn

Resident Physician in Obstetrics and  
Gynecology, Greenpoint Hospital

### PRETIBIAL FEVER

To the Editor --In THE JOURNAL June 5, appeared an article entitled "Pretibial Fever, An Obscure Disease," by Lieut. Col. Worth B. Daniels and Capt. H. Arthur Grennan. In this article a case is made for a new syndrome characterized by fever and headache of the orbital type initiated by chills or chilly sensations and further characterized by the appearance shortly after the onset by splotchy erythematous coalescing lesions involving the anterior surface of both legs predominantly. In my experience with several hundreds of cases of dengue in an area where dengue is hyperendemic, the clinical manifestations of the disease were no different from those described in the article mentioned with the exception of the predominance of pretibial lesions. Such pretibial lesions, however, were not uncommon in this series although they were generally associated with similar lesions on the trunk. In an article written by Rice (*Am J Trop Dis* 3 73 [March] 1923) the cutaneous manifestations of dengue fever in an epidemic in Galveston are described which were "characteristically multi-forms or polymorphous, bilateral and symmetrical with some urticarial element present [and] suggest a great similarity to the erythema multiforme group. The eruption seemed to show a predilection for the face, forehead, neck, upper chest, forearms, legs, palms and soles. For all the limitations of black and white photography, the lesions in the illustrations appear identical with those which I have seen here.

The absence of the saddle backed temperature curve in certain epidemics has been noted. Siler, Hall and Hitchens (*Philippine J Sc* 29 1 [Jan-Feb] 1926) said "Casual observation of a number of clinical cases in the wards of the Sternberg General Hospital had convinced us that the disease as manifested in Manila shows the diphasic temperature of the classic description only rarely." In the encyclopedic monograph

on dengue by George F. Lumley and Frank H. Taylor published by the Department of Health of the Commonwealth of Australia as Service Publication (School of Public Health and Tropical Medicine) No. III the following statement appears on page 4: "There is no characteristic form of fever in dengue. Truly the diphasic forms are often regarded as characteristic and classic, though clinicians have often expressed dissatisfaction of such a viewpoint. If there be a clear recognition that the fever may assume one of many forms, then the clinical appreciation of dengue will rest on a firmer base."

Comparatively few of our patients showed prolonged "post-febrile depletion or depression" and on the average were returned to duty in approximately eight to ten days after the onset.

Cough was reported in dengue by W. E. George in 1925 in a report on an epidemic of dengue in Townsville, North Queensland (Australia), unpublished.

Sore throat has been described by Goldschmidt and Crosse in the *Medical Journal of Australia*.

A slight dry cough and mild sore throat were noted with a fair degree of frequency in our cases of dengue.

Case 2 as described by the authors is typical of dengue as it is seen in this area.

Lumley and Taylor state "It is a singular circumstance that dengue fever is not medically well known. This is not the fault of the individual practitioner but is principally due to the fact that relatively few have to deal with the disease and that literature on dengue fever is largely buried in journals inaccessible outside large libraries. Other factors aggravate this position, for example, the conflict of undoubted good clinical descriptions. This raises perhaps a major consideration. Most conflicts of opinion on description are probably more apparent than real. There has been tendency to regard dengue fever as a single clinical entity, whereas the truth may well be that the term dengue fever covers a group of diseases. In fact the term 'the dengue fevers' is emphasized by some authors. There may be different strains or types of the causative agent."

The disease described as pretibial fever so closely resembles dengue that, until further evidence is presented, the postulation of a new clinical entity will not serve to clarify our understanding of a disease already known to exist in the South Atlantic seaboard and which may have increasing importance in the United States.

NATHANIEL A. COHEN, Captain, M. C., U. S.

### CITRATE WITH PROCAINE IN FRACTURE TREATMENT

To the Editor --The role of procaine hydrochloride as a local anesthetic in fracture reduction is so well known as to require no additional comment. For many years I have used equal parts of 2.5 per cent sodium citrate and procaine as a local anesthetic. The theoretical advantages of this procedure consist in delaying the formation of any blood clot and thus aiding later reduction procedures. A certain percentage of all fractures are necessarily later operated on. When this has been done an opportunity has been afforded for visualizing the effects of the citrate.

The condition of the fracture site even in such major joints as the knee has been found to be much better than when the citrate was not added. The procedure is extremely simple, merely using 50 per cent of citrate and procaine of double the strength usually preferred. The anesthetic thus has the same effect. This procedure has been used for a sufficient number of years with satisfactory results to warrant bringing it to the attention of surgeons doing this type of work.

CHARLES MURRAY GRATZ, M.D., New York

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Nov. 27, page 859

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II Jan 17-19 Part III Various centers, Dec and Jan Sec, Dr J S Rodman, 225 S 15th St., Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY Oral Part II Chicago, June 12-16 Final date for filing application is March 12 Sec, Dr Paul M Wood, 745 Fifth Ave., New York

AMERICAN BOARD OF DERMATOLOGY & SYPHILIOLOGY Written Various centers, May 8 Oral Chicago, June 9-10 Final date for filing application is April 1 Sec, Dr C Guy Lane, 416 Marlboro St., Boston

AMERICAN BOARD OF INTERNAL MEDICINE Written Various centers, Feb 21 Final date for filing application is Dec 15 Ass't Sec, Dr William A Werrell, 1301 University Ave., Madison Wis

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Part II May or June Sec, Dr Paul Titus, 1015 Highland Bldg., Pittsburgh 6 Pa

AMERICAN BOARD OF OPHTHALMOLOGY New York June Final date for filing application is Dec 15 Chicago, October Sec, Dr John Green, 6830 Watterman Ave., St Louis

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Written and Oral Part II Chicago Jan 21-22 Sec, Dr Guy A Caldwell, 3503 Prytania St., New Orleans, La

AMERICAN BOARD OF OTOLARYNGOLOGY Oral Los Angeles Feb 2-5 Sec, Dr Dean M Lierle, University Hospitals, Iowa City, Ia

AMERICAN BOARD OF PEDIATRICS Written Locally, Feb 4 Oral Philadelphia March 25-26, and San Francisco, May 6-7 Sec, Dr C A Aldrich, 707 Fullerton Ave., Chicago

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY Oral Locally, Dec 20-21 Sec, Dr Walter Freeman, 1028 Connecticut Ave NW, Washington, D C

AMERICAN BOARD OF RADIOLOGY February Final date for filing application is Dec 15 Sec, Dr B R Kirshin, 102 110 Second Ave SW Rochester, Minn

AMERICAN BOARD OF SURGERY Written Part I March Final date for filing application is Jan 1 Sec, Dr J Stewart Rodman, 225 S 15th St., Philadelphia

AMERICAN BOARD OF UROLOGY Oral Chicago Feb 15-17 Written Various Centers Dec 4 Sec Dr Gilbert J Thomas 1409 Willow St., Minneapolis

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Compensation of Physician Liability of Employee for Fees of Physician Treating Industrial Injury**—Scott, an employer subject to the workmen's compensation act of North Dakota, insured in the monopolistic state workmen's compensation fund of that state, and himself personally entitled to benefits conferred by the act, was injured in the course of his employment. The physician plaintiff treated him for his industrial injuries. Subsequently the physician sued both Scott and the state workmen's compensation bureau, an agency of the state administering the fund, for the reasonable value of the services he had rendered, alleging, in the words of the court whose opinion is here abstracted

that both Scott and the bureau employed the plaintiff to render medical services to Scott, that the services were worth a thousand dollars and no part of this has been paid except the sum of \$250 paid by the bureau

Each defendant demurred and from the overruling by the trial court of both demurrers the defendants appealed to the Supreme Court of North Dakota

Apparently Scott's demurrer was based on the theory that, because of his contract with the workmen's compensation bureau,

the bureau alone was liable for the medical services rendered to him. This position cannot be sustained, said the Supreme Court. Even though Scott was entitled to share in the compensation fund, and therefore it was the duty of the bureau to furnish him medical service, this does not relieve him from his own personal liability for the medical services rendered him. The complaint in this case alleges that Scott made a contract with the physician for medical services. It shows the reasonable amount of the services and the amount paid. For the purposes of Scott's demurrer, those allegations are admitted to be true. Clearly, then, the complaint states a cause of action against Scott.

A physician, continued the court, under the applicable law in North Dakota, is not compelled to perform medical services for a workman in an employment subject to the workmen's compensation act. He is not legally bound to render medical services either for the injured workman or for the workmen's compensation bureau. He may make such legal contract as he sees fit and therefore he may contract with the injured workman without reference to the bureau. In *Hannon v Interstate Power Co*, 65 S D 493, 275 N W 358, construing the workmen's compensation act of South Dakota, which in all respects here material is similar to the North Dakota act, a physician who had rendered services to an injured employee instituted action against the employer. The employer defendant set forth that it "was operating under the Workmen's Compensation Law" and that the industrial commissioner had exclusive jurisdiction. The Supreme Court of South Dakota in that case pointed out that "physicians are neither employers [n]or employees within the meaning of the act and are not within the class of persons who can either elect or refuse to come under the provisions of the law." While under the North Dakota law there is no liberty of election as to whether an industry shall or shall not come within the provisions of the workmen's compensation act, nevertheless physicians are not one of those who must render service. If the defendant Scott employed the plaintiff physician to furnish medical service for himself he must pay the reasonable value of those services when no express agreement was made as to the amount of the fees, and this is so regardless of what amount the workmen's compensation bureau may allow for medical services. The court accordingly concluded that Scott's demurrer was properly overruled. The court expressly stated, however, that in sustaining the action of the trial court in this respect it was not determining any right the physician might have to compel payment out of the workmen's compensation fund, since that matter was not involved in determining the propriety of the trial court's action with respect to Scott's demurrer.

The Supreme Court held, however, that the physician could not properly maintain a suit against the workmen's compensation bureau since it was not a legal entity subject to suit. The Supreme Court accordingly reversed the action of the trial court in overruling the demurrer interposed by the workmen's compensation bureau—*Henderson v Scott*, 10 N W (2d) 490 (N D, 1943).

## Society Proceedings

### COMING MEETINGS

American Society of Anesthetists, New York, Dec 9 Dr McKinnie L Phelps, 745 Fifth Ave., New York 22, Acting Secretary

Annual Forum on Allergy, St Louis, Jan 22-23 Dr Jonathan Forman 394 East Town St., Columbus, Ohio

Association for Research in Nervous and Mental Diseases New York, Dec 17-18 Dr Thomas E Bamford Jr, 115 East 82d St., New York 28, Secretary

Southern Surgical Association, New Orleans, Dec 29 Dr Alton Ochsner, 1430 Tulane Ave New Orleans, Secretary

## Archives of Ophthalmology, Chicago

30 421-584 (Oct) 1943

- New Answer to Question of Macular Sparing. F H Verhoeff—p 421
- \*Penicillin and Sulfadiazine in Treatment of Experimental Intraocular Infection with Pneumococcus. L von Sallmann—p 426
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- Comparison of New Sensitometric Method with Usual Techniques of Refraction. M Luckiesh and F K Moss—p 489
- Tuberculous Sclerosis. Elizabeth F Constantine—p 494
- Cooperations for Glaucoma. W S Knighton—p 499
- Positional Corneal Light Reflexes as Aid in Binocular Investigation. F Krimsky—p 505
- Quantitative Comparison of Methods of Administering Physostigmine. J I Boyd—p 521
- Clinical Study and Review of Tonometry. G Freiman—p 526

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According to von Sallmann, *Diplococcus pneumoniae* is considered the most frequent cause of severe intraocular infections following perforating injuries. Although statistical data on the types of pneumococci in cases of endophthalmitis and panophthalmitis following various perforating injuries are not available, it is justifiable to apply to intraocular infections the figures of the incidence of the various pneumococcal types present on the normal conjunctiva, because it is assumed that the microorganisms from the surface of the conjunctiva and cornea, drawn into the eye by the penetrating foreign body, generally become the source of infection. By injections of a dilution of a twenty-four hour broth culture into the anterior chamber of adult chinchilla rabbits a fairly well standardized infection with a typical course was obtained and used as the test object. The action of two chemotherapeutic agents, sulfadiazine and penicillin was studied. It was found that experimental intraocular infection caused by *D. pneumoniae*, type III and type X, was not stopped or was only temporarily improved by intensive local treatment with sodium sulfadiazine combined with sulfadiazine feeding when the treatment was initiated six hours after inoculation. Severe intraocular infection caused by types III, X and VII was usually checked by local treatment with the sodium or the ammonium salt of penicillin in solutions of 0.25 per cent and 0.1 per cent even when this treatment did not start until twelve to thirteen hours after inoculation. The local applications were generally continued from two to four days. Intraocular infection caused by the injection of types III and X with simultaneous injury of the lens capsule was treated successfully with penicillin in most instances in which the treatment was started six hours after injection and continued five to six days. The iontophoretic introduction of the penicillin salt in 0.1 and 0.25 per cent solutions was occasionally more effective than the corneal bath (0.25 per cent solution) when the infection was very severe. If repeated iontophoretic applications of 0.25 per cent solution were used because of the severity of the infection, corneal damage was noticed in the form of a large abrasion, which usually healed without residual opacity after a few days. Strains of types VI, XIV, XIX and XXIII showed in vitro the same sensitivity to penicillin as the strains of types III and VII used in the infection of eyes of rabbits.

**Vitamin E in Interstitial Keratitis**—Stone used vitamin E in treating 10 patients with advanced interstitial keratitis. All had received ample antisyphilitic therapy in the past. Four had received artificial fever therapy a number of months earlier because of associated involvement of the central nervous system without its effectively influencing the course of the keratitis. Two patients were given artificial fever treatments shortly after therapy with vitamin E was begun. Vitamin E was mainly effective in hastening absorption of superficial and deep corneal exudates, it helped to relieve the associated photophobia and reduce excessive corneal vascularization and circumcorneal congestion. In extensive opacities and corneal scarring its administration for a period of months has produced a

gradual and continuous clearing of the cornea with a return of normal vision. Riboflavin when administered alone or in combination with vitamin E was effective primarily in relieving some of the photophobia and reducing the extent of circumcorneal injection and capillary proliferation. It appeared to have no effect on the rate of absorption of corneal opacities and scars. It is suggested that vitamin E combined with vitamin B complex is a most valuable adjunct in the treatment of interstitial keratitis.

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- Suppurative Anterior Mediastinitis in an Infant Following Intrasternal Blood Transfusion Operation and Recovery. M M Ravitch—p 250
- Therapy of Shock in Experimental Animals with Plasma and Serum Protein Solutions. III Freezing Shock Concentrated Plasma and Serum Therapy With and Without Amputation of Damaged Extremity. E E Muirhead, L A Kregel and J M Hill—p 258
- Frozen Shoulder, Periarthritis, Bicipital Tenosynovitis. R K Lippmann—p 283
- Progress in Orthopedic Surgery for 1942. Review Prepared by an Editorial Board of American Academy of Orthopaedic Surgeons—p 297

## Arkansas Medical Society Journal, Fort Smith

40 59-84 (Sept) 1943

Analysis of Thyroid Surgery. J H Hayes—p 59

40 85-102 (Oct.) 1943

Gallbladder Problem. R L Sanders—p 85

## Bull of the U S Army Med Dept, Washington, D C

69 1-90 (Oct) 1943

- \*Ambulatory Treatment of Cerebral Concussion. E W Shearburn and E H Mulford—p 36
- Military Ski Fractures. W E. Brown Jr and M J Brown—p 42
- Perineal Urethrostomy for Drainage of Neurological Bladders. L G Lewis—p 46
- Communicable Disease Control at Camp Grant, Illinois. N C Bullock—p 49
- Dhobie Mark Dermatitis. T Fitz Hugh Jr, C S Livingood and A M Rogers—p 55
- Dermatitis Venenata Caused by Ink from Bichi Nut. S P Waud and H Fein—p 59
- Code Neurosis. J Chornyak—p 61
- Study of 1000 Cases Separated from Army on Certificate of Disability for Discharge. R E Housey—p 64
- Fumigation of Barracks by Sulfur Dioxide. P Zanca—p 76
- Atypical Neuralgia the Result of Impacted Teeth. F E Klee—p 79
- Use of Coliform Test in Controlling Quality of Pasteurized Milk. C J Babcock—p 81
- Inspection of Powdered Whole Milk. R E Thompson—p 85

**Ambulatory Treatment of Cerebral Concussion**—Shearburn and Mulford report the results of treatment of 90 acute head injuries with cerebral concussion during a period of ninety-eight days in an evacuation hospital in Casablanca, North Africa. Unconsciousness varied from momentary to ninety-six hours, with an average of five and four tenths hours. For purposes of analyzing the early ambulation method of treatment the patients were divided into two groups. Group A includes patients on whom it was possible to utilize the method. This group contains 72 patients with head injury only or with head injury plus some other injury not requiring bed rest as a prerequisite of treatment. Group B includes cases in which it was not possible to use the early ambulatory method. The 18 cases in this group include basal skull fractures with drainage from the ears or nose and cases of head injury with concomitant injuries of the extremities or abdomen necessitating a longer period of bed rest than that required by the cerebral concussion. Other investigators pointed out that the incidence of post-traumatic intracranial hemorrhage is not increased by allowing the patient to be ambulatory soon after the return of consciousness. This observation is verified by their cases. The incidence of postconcussion symptoms appears to have been greatly reduced by early ambulation. The authors suggest that early ambulation may be the method of choice for treating such cases.



## Connecticut State Medical Journal, Hartford

7 677-736 (Oct.) 1943

- Clinical Epidemiology of Polionychitis H A Wenner—p 679  
Mental Manifestations in Cardiovascular Disease E Kahn—p 683  
Reduction of Fractures R M Yergisou—p 686  
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Cord Tumor B B Whitcomb—p 693  
Management of Neurologic Syphilis in General Hospital by Malaria Inoculation T P Murdock and D J Cohen—p 697

## Gastroenterology, Baltimore

1 821-910 (Sept.) 1943

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Nutritional Standards for Men in Tropical Climates R E Johnson—p 832  
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## Journal of Clinical Investigation, Boston

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- Role of Extracellular Fluid in Maintenance of Normal Plasma Volume J V Warren A J Merrill and E A Stead Jr—p 635  
Concentration of Vitamin A in Blood Plasma During Pregnancy O Bodansky J M Lewis and M C C Lillienfeld—p 643  
\*Penicillin Its Antibacterial Effect in Whole Blood and Serum for Hemolytic Streptococcus and Staphylococcus Aureus C H Rammelkamp and C S Keefer—p 649  
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Estimation and Control of Postoperative Dehydration with Aid of Hemoglobin and Plasma Protein Determinations B W Seaman and E Ponder—p 673  
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Chloride Metabolism and Plasma Amino Acid Levels in Primary Atypical Pneumonia K Emerson Jr E C Curran G S Mirick and J E Ziegler Jr—p 695  
Effect of Atropine on Absorption of Vitamin A F J Ingelfinger R E Moss and J D Helm Jr—p 699  
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\*Arterial Lesions in Hypertension Study of 350 Consecutive Cases Treated Surgically Estimation of Prognostic Value of Muscle Biopsy P P Foa, Naomi L Foa and M M Peet—p 727  
Studies in Cancer VII Enzyme Deficiency in Human and Experimental Cancer R C Roskelley Neficia Mayer B N Horvitt and W T Salter—p 743  
Binding of Sulfonamide Drugs by Plasma Proteins Factor in Determining Distribution of Drugs in Body B D Davis—p 753

**Antistaphylococic and Antistreptococic Action of Penicillin.**—The action of penicillin against Streptococcus hemolyticus and Staphylococcus aureus was studied by Rammelkamp and Keefer using whole defibrinated blood and serum. Whereas normal serum containing no penicillin presented no bactericidal action, whole blood had a slight antibacterial action, owing to the presence of phagocytic cells. Addition of 0.3 Florey unit of penicillin per cubic centimeter of whole blood resulted in a striking increase in the bactericidal action. This effect was not dependent on phagocytosis since a similar action was observed in the serum on addition of the same amount of penicillin. The blood and serum withdrawn from normal subjects injected with 20,000 Florey units of penicillin exhibited a definite bactericidal and bacteriostatic effect against staphylococci and streptococci. The degree of antibacterial action observed in whole blood after the administration of penicillin was directly related to its concentration in the serum. As the concentration increased there was a rapid rise in the bactericidal power of the blood. Maximal action against Streptococcus haemolyticus was produced by concentrations of 0.019 to 0.156 Florey units per cubic centimeter of serum. Against Staphylococcus aureus maximal bactericidal effect was exhibited by concentrations of at least 0.156 unit per cubic centimeter. The antistaphylococic and antistreptococic effect produced by adding or injecting sulfathiazole and sulfadiazine was compared

to that of penicillin. The observations showed that both in vitro and in vivo the antistreptococic action of whole blood containing only 0.07 unit of penicillin per cubic centimeter of serum is much greater than that of whole blood containing 51 mg of sulfadiazine per hundred cubic centimeters of blood. Against Staphylococcus aureus sulfadiazine exhibited only a slight bacteriostatic effect at concentration of 51 mg per hundred cubic centimeters, while pronounced antibacterial effect was observed by penicillin at concentration of 0.039 unit per cubic centimeter of serum.

**Arteriol Lesion in Hypertension.**—In order to obtain data of prognostic value for the results of supradiaphragmatic splanchnicectomy in hypertensive patients, the Foa and Peet measured in biopsy material the ratio of the thickness of the wall to the diameter of the lumen (W/L) of the arterioles of skeletal muscles. Three hundred and fifty cases of arterial hypertension were studied. All patients were submitted to supradiaphragmatic splanchnicectomy and lower dorsal sympathetic ganglionectomy and followed from nine months to seven years after the operation. The degree of thickening of the arteriolar wall was statistically compared to the severity of other signs and symptoms and to the therapeutic results. A significant correlation was found between increase in W/L ratio and evidences of damage to the vascular system such as elevation of the blood pressure and vascular changes in the eyegrounds. As a rule, patients with greater degree of arteriosclerosis also exhibited more severe cardiac and renal symptoms. There was also a definite correlation between the W/L ratio and the therapeutic results measured by reduction of blood pressure, improvements in vascular lesions of the eyegrounds, improvement in renal and cardiac functions and mortality rate. The percentage of patients improved was much higher among those with a low ratio and lower among those with a high ratio. The results are in agreement with the hypothesis that the surgical treatment of hypertension used gives better results when hypertension is due to a spasm of the arterioles or to a mild, reversible degree of hypertrophy of the muscle fibers in the tunica media and not when severe, permanent anatomic lesions have transformed the majority of the arterioles into rigid and narrow tubes.

## Journal of Immunology, Baltimore

47 181-282 (Sept.) 1943 Partial Index

- Immunochemical Studies on Human Serum I Human Complement and Its Components E E Ecker L Pillemer and S Seifter—p 181  
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- Blood Pressure Fluctuations in Bronchial Asthma II Effect of Epinephrine and Amnophylline H Osgood and F E Ehret—p 1415  
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Relation of Length of Carbon Chain to Primary and Functional Toxicities of Alcohols H Welch and G G Slocum—p 1440  
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Preparation and Properties of Dry Powdered Mixture of Sulfamidate and Hemostatic Globulin I A Parfentyev Mary A. Goodline and F. L. Clapp—p 1463

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- Progress in Orthopedic Surgery for 1942 Review Prepared by an Editorial Board of American Academy of Orthopaedic Surgeons—p 297

## Arkansas Medical Society Journal, Fort Smith

40 59-84 (Sept.) 1943

- Analysis of Thyroid Surgery J H Hayes—p 59

40 85-102 (Oct.) 1943

- Gallbladder Problem R L Sanders—p 85

## Bull of the U S Army Med Dept, Washington, D C

69 1-90 (Oct) 1943

- \*Ambulatory Treatment of Cerebral Concussion E W Shearburn and E H Mulford—p 36
- Military Ski Fractures W E Brown Jr and M J Brown—p 42
- Perineal Urethrostomy for Drainage of Neurological Bladders L G Lewis—p 46
- Communicable Disease Control at Camp Grant, Illinois N C Bullock—p 49
- Dhobie Mark Dermatitis T Fitz Hugh Jr, C S Livingood and A M Rogers—p 55
- Dermatitis Venenata Caused by Ink from Bichi Nut S P Waud and H Fein—p 59
- Code Neurosis J Chornyak—p 61
- Study of 1000 Cases Separated from Army on Certificate of Disability for Discharge R E Kinsey—p 64
- Fumigation of Barracks by Sulfur Dioxide P Zanca—p 76
- Atypical Neuralgia the Result of Impacted Teeth F E Klee—p 79
- Use of Coliform Test in Controlling Quality of Pasteurized Milk C J Babcock—p 81
- Inspection of Powdered Whole Milk R E Thompson—p 85

**Ambulatory Treatment of Cerebral Concussion**—Shearburn and Mulford report the results of treatment of 90 acute head injuries with cerebral concussion during a period of ninety-eight days in an evacuation hospital in Casablanca, North Africa. Unconsciousness varied from momentary to ninety-six hours, with an average of five and four tenths hours. For purposes of analyzing the early ambulation method of treatment the patients were divided into two groups. Group A includes patients on whom it was possible to utilize the method. This group contains 72 patients with head injury only or with head injury plus some other injury not requiring bed rest as a prerequisite of treatment. Group B includes cases in which it was not possible to use the early ambulatory method. The 18 cases in this group include basal skull fractures with drainage from the ears or nose and cases of head injury with concomitant injuries of the extremities or abdomen necessitating a longer period of bed rest than that required by the cerebral concussion. Other investigators pointed out that the incidence of post-traumatic intracranial hemorrhage is not increased by allowing the patient to be ambulatory soon after the return of consciousness. This observation is verified by their cases. The incidence of postconcussion symptoms appears to have been greatly reduced by early ambulation. The authors suggest that early ambulation may be the method of choice for treating such cases.

## Connecticut State Medical Journal, Hartford

7 677-736 (Oct) 1943

- Clinical Epidemiology of Poliomyelitis H A Wenner—p 679  
Mental Manifestations in Cardiovascular Disease E Kahn—p 683  
Reduction of Fractures R M Yergason—p 686  
Relationship Between Referring Physician and Mental Hospital D J MacPherson—p 689  
Cord Tumor B B Whitcomb—p 693  
Management of Neurologic Syphilis in General Hospital by Malaria Inoculation T P Murdock and D J Cohen—p 697

## Gastroenterology, Baltimore

1 821-910 (Sept) 1943

- Esophageal Pain H J Moersch and J R Miller—p 821  
Nutritional Standards for Men in Tropical Climates R E Johnson—p 832  
Problems in Gastric Diagnosis Gastro-scope as Supplementary Aid to X-Ray Examination A L Cohn and J Levitt—p 841  
Studies of Urobilinogen II Quantitative Urobilinogen Determinations in Differential Diagnosis of Jaundice F Steigmann and Josephine M Dymowicz—p 855  
Studies in Old Age VII Intestinal Absorption in Old Age J Meyer Harriet Sorter J Oliver and H Necheles—p 876  
Gastric Excretion of Sulfonamide Drugs I H Einsel E N Nixon L Gitman and J M Rogoff—p 882

## Journal of Clinical Investigation, Boston

22 635-762 (Sept) 1943

- Role of Extracellular Fluid in Maintenance of Normal Plasma Volume J V Warren A J Merrill and E A Stead Jr—p 635  
Concentration of Vitamin A in Blood Plasma During Pregnancy O Bodansky J M Lewis and M C C Lillienfeld—p 643  
\*Penicillin Its Antibacterial Effect in Whole Blood and Serum for Hemolytic Streptococcus and Staphylococcus Aureus C H Rammelkamp and C S Keefer—p 649  
Observations on Urinary Excretion of Sulfadiazine O L Peterson R A Goodwin Jr and M Finland—p 659  
Estimation and Control of Postoperative Dehydration with Aid of Hemoglobin and Plasma Protein Determinations B W Seaman and E Ponder—p 673  
Systemic and Renal Circulatory Changes Following Administration of Adrenin Ephedrine and Paredrinol to Normal Man H A Ranges and S E Bradley—p 687  
Chloride Metabolism and Plasma Amino Acid Levels in Primary Atypical Pneumonia K Emerson Jr E C Curnen G S Mirick and J E Ziegler Jr—p 695  
Effect of Atropine on Absorption of Vitamin A F J Ingelfinger R E Moss and J D Helm Jr—p 699  
Interrelations of Serum Lipids J P Peters and Evelyn B Man—p 707  
\*Arteriole Lesions in Hypertension Study of 350 Consecutive Cases Treated Surgically Estimation of Prognostic Value of Muscle Biopsy P P Foa Naomi L Foa and M M Peet—p 727  
Studies in Cancer VII Enzyme Deficiency in Human and Experimental Cancer R C Roskelley Nelia Mayer B N Horwitz and W T Salter—p 743  
Binding of Sulfonamide Drugs by Plasma Proteins Factor in Determining Distribution of Drugs in Body B D Davis—p 753

**Antistaphylococcal and Antistreptococcal Action of Penicillin.**—The action of penicillin against *Streptococcus hemolyticus* and *Staphylococcus aureus* was studied by Rammelkamp and Keefer using whole defibrinated blood and serum. Whereas normal serum containing no penicillin presented no bactericidal action, whole blood had a slight antibacterial action, owing to the presence of phagocytic cells. Addition of 0.3 Florey unit of penicillin per cubic centimeter of whole blood resulted in a striking increase in the bactericidal action. This effect was not dependent on phagocytosis, since a similar action was observed in the serum on addition of the same amount of penicillin. The blood and serum withdrawn from normal subjects injected with 20,000 Florey units of penicillin exhibited a definite bactericidal and bacteriostatic effect against staphylococci and streptococci. The degree of antibacterial action observed in whole blood after the administration of penicillin was directly related to its concentration in the serum. As the concentration increased there was a rapid rise in the bactericidal power of the blood. Maximal action against *Streptococcus haemolyticus* was produced by concentrations of 0.019 to 0.156 Florey units per cubic centimeter of serum. Against *Staphylococcus aureus* maximal bactericidal effect was exhibited by concentrations of at least 0.156 unit per cubic centimeter. The antistaphylococcal and antistreptococcal effect produced by adding or injecting sulfathiazole and sulfadiazine was compared

to that of penicillin. The observations showed that both in vitro and in vivo the antistreptococcal action of whole blood containing only 0.07 unit of penicillin per cubic centimeter of serum is much greater than that of whole blood containing 51 mg of sulfadiazine per hundred cubic centimeters of blood. Against *Staphylococcus aureus* sulfadiazine exhibited only a slight bacteriostatic effect at concentration of 51 mg per hundred cubic centimeters, while pronounced antibacterial effect was observed by penicillin at concentration of 0.039 unit per cubic centimeter of serum.

**Arteriole Lesion in Hypertension.**—In order to obtain data of prognostic value for the results of supradiaphragmatic splanchnicectomy in hypertensive patients, the Foas and Peet measured in biopsy material the ratio of the thickness of the wall to the diameter of the lumen (W/L) of the arterioles of skeletal muscles. Three hundred and fifty cases of arterial hypertension were studied. All patients were submitted to supradiaphragmatic splanchnicectomy and lower dorsal sympathetic ganglionectomy and followed from nine months to seven years after the operation. The degree of thickening of the arteriole wall was statistically compared to the severity of other signs and symptoms and to the therapeutic results. A significant correlation was found between increase in W/L ratio and evidences of damage to the vascular system such as elevation of the blood pressure and vascular changes in the eyegrounds. As a rule, patients with greater degree of arteriosclerosis also exhibited more severe cardiac and renal symptoms. There was also a definite correlation between the W/L ratio and the therapeutic results measured by reduction of blood pressure, improvements in vascular lesions of the eyegrounds, improvement in renal and cardiac functions and mortality rate. The percentage of patients improved was much higher among those with a low ratio and lower among those with a high ratio. The results are in agreement with the hypothesis that the surgical treatment of hypertension used gives better results when hypertension is due to a spasm of the arterioles or to a mild, reversible degree of hypertrophy of the muscle fibers in the tunica media and not when severe, permanent anatomic lesions have transformed the majority of the arterioles into rigid and narrow tubes.

## Journal of Immunology, Baltimore

47 181-282 (Sept.) 1943 Partial Index

- Immunochemical Studies on Human Serum I Human Complement and Its Components E E Becker L Pillemer and S Seifter—p 181  
Detection of Virus of Mouse Encephalomyelitis in Intestines of Normal Kangaroo Rats J L Melnick—p 231  
Histamine-Protein Complexes Synthesis and Immunologic Investigation I Histamine-Azoprotein N Fell Gertrude Rodney and D E Marshall—p 237  
Isolation and Characterization of Influenza A Virus (PR8 Strain) A R Taylor D G Sharp Dorothy Beard J W Beard J H Dingle and A E Feller—p 261

## Journal of Lab and Clinical Medicine, St Louis

28 1415-1534 (Sept) 1943

- Blood Pressure Fluctuations in Bronchial Asthma II Effect of Epinephrine and Aminophylline H Osgood and F E Ehret—p 1415  
Poller Surveys in United States Critical Review P M Gottlieb and E Urbach—p 1426  
Relation of Length of Carbon Chain to Primary and Functional Toxicities of Alcohols H Welch and G G Slocum—p 1440  
Unusual Temperature Course in Infectious Mononucleosis S H Ruzler and J J Hertz—p 1445  
Attempts to Obtain Better Results with Bacterial Antigen (Vaccine) Therapy of Low Grade Chronic (Focal) Infection I Possible Errors of Usual Methods M H Stiles C Berens W B Rawls and G H Chapman—p 1447  
Treatment of Experimentally Induced Type I Pneumococcus Pneumonia in Albino Rats Comparative Study of Therapeutic Efficiency of Various Sulfonamides and Specific Rabbit Antipneumococcus Serum and Combinations of Two E H Loughlin R H Bennett, Mary E Flanagan and S H Spitz—p 1455  
Simultaneous Performance of Weltmann Serum Coagulation Test, Cephalin Flocculation Test and Modified Takata-Ara Reaction as Aid in Differential Diagnosis of Liver Disease M Wachstein—p 1462  
Preparation and Properties of Dry Powdered Mixture of Sulfanilamide and Hemostatic Globulin I A Parfentjev Mary A Goodline and F L Clapp—p 1465

**Journal of the Mount Sinai Hospital, New York**

10 389-454 (Sept-Oct) 1943

- Hell Schlick Lecture Choice of Time and Type of Operation in Surgery of Early Lute W E Todd—p 389  
 Case of Neurofibromatosis in Child 5½ Years of Age Bela Schlick—p 399  
 Excision of Teratoma of Anterior Mediastinum H Neuhoof—p 402  
 Cervicodistal Lymphangioma (Cystic Hygroma) Report of 2 Cases in Infants E I Arnlheim—p 404  
 Adenoma of Bronchus H Hancell—p 411  
 Servicothoracic Neurofibromatosis Case G J Gaudes—p 411  
 Histiocytic Granuloma of Mediastinum C B Rubin—p 420  
 Translational Cell Carcinoma of Thymus in Child Follow Up Report A H Anfses—p 423  
 Neuroblastoma of Mediastinum I Bridge—p 426  
 Metastatic Carcinoma of Lung A L Florman—p 429

**Journal of Nat Cancer Inst, Washington, D C**

1 1-130 (Aug) 1943 Partial Index

- Adaptation of Transparent Chamber Technique to Mouse G H Algire—p 1  
 Function of Growth Rates of Tumors H F Blum—p 21  
 Morphology and Growth of Subcutaneous Tumors Induced with Carcinogenic Hydrocarbons in Strain C57 Male Mice M B Shmukin and W R Bryan—p 25  
 Ultracentrifugal Studies of Some Complexes Obtained from Mouse Milk, Mammary Tumor and Other Tissues H Kahler and W R Bryan, with technical assistance of H M Sipe—p 37  
 Method for Quantitative Morphologic Analysis of Tissues H W Chalkley—p 47  
 Dehydration for Yeast and for Thymine Nucleic Acids in Normal and Neoplastic Tissues J P Greenstein—p 55  
 Colloid Osmotic Pressure of Scrums of Rats Bearing Transplanted Jensen Sarcoma J P Greenstein and J W Thompson—p 63  
 Serologic and Amphipathic Reactions of Cathepsins of Normal and Neoplastic Tissues Mary I Mayer and M K Barrett—p 63  
 Accuracy and Reproducibility in Induction of Tumors with Ultraviolet Radiation H F Blum—p 75  
 Chemical Treatment of Tumors V Isolation of Hemorrhage Producing Fraction from *Serratia marcescens* (Bacillus Prodigiosus) Culture Filtrate M J Sheir and I C Turner with technical assistance of A Perrault and Theresa Shovelton—p 81

**Journal of Nutrition, Philadelphia**

26 219-326 (Sept) 1943 Partial Index

- Effect of Cooking With and Without Sodium Bicarbonate on Thiamine, Riboflavin and Ascorbic Acid Content of Peas Cornelia H Johnston, Louise Schriener S Rappaport and H J Deuel Jr—p 227  
 B Vitamins in Honey G Kitzes, H A Schuette and C A Elvehjem—p 241  
 Influence of Thiamine Intake of Pig on Thiamine Content of Pork with Observations on Riboflavin Content of Pork R C Miller, J W Pence, R A Dutcher, P T Ziegler and M A McCarty—p 261  
 Dietary Requirements for Fertility and Lactation VIII Further Studies on Role of P-Aminobenzoic Acid and Inositol in Lactation and Growth of Albino Rat B Sure—p 275  
 Pantothenic Acid Requirement of Hens Fed a Hatched Diet M B Gillis, G F Heuser and L C Norris—p 285  
 Inadequacy of Eight Synthetic B Vitamins for Nutrition of Puppies—Unknown Factor (Factors) in Yeast and Probably Liver J P Lambouy and L S Nasset—p 293  
 Anticardiolipic Potency of Seed Oils D S Anthony, F W Quackenbush A Hyde and H Steubock—p 303  
 Effect of Commercial Clarification of Vitamin Content of Honey M H Haydal, L S Palmer M C Fanquary and A E Vivino—p 319

**B Vitamins in Honey**—Kitzes and his collaborators state that microchemical and microbiologic determinations showed the presence in honey of thiamine, riboflavin, nicotinic acid, pantothenic acid, pyridoxine, biotin and folic acid. The variation among samples was very large, owing perhaps to the source of the honey and the number of pollen grains present. Comparison of new and aged honeys revealed a decrease in the pantothenic acid content of the latter.

**Kentucky Medical Journal, Bowling Green**

41 329-364 (Oct) 1943

- Benign Tumors of Stomach S T Simmons and F D Coleman—p 338  
 Some Obstetric and Gynecologic Observations T A Griffith—p 344  
 Schizophrenic and Organic Reaction Type of Psychoses I Kimbell—p 346  
 Report of Eighty Cases of Meningitis from Medical Service of Station Hospital, Nashville Army Air Center, Nashville, Tennessee A C McCarty and G L Infield—p 348  
 Hypernephroma with Metastases S E Johnson and V Stable—p 351  
 Tumor of Lower Lumbar Spine C Wood and E L Shifflet—p 352  
 Termination of Pernicious Vomiting of Pregnancy by Dilatation of Cervix W P McKee and G E McMunn—p 354

**Michigan State Medical Society Journal, Lansing**

42 797-848 (Oct) 1943

- Skin in Endocrinology C J Marinus—p 797  
 Place of Hormone Assays in Clinical Medicine G M Riley—p 803  
 Hypersensitivity Neglected Phase of Allergy C F Brunk—p 808  
 Intracapsular Cataract Extraction, with Modification of Dimitry's Suction Syringe J C Gemberoy—p 812  
 Vaccine Therapy in Treatment of Uveitis H A Dunlap—p 815  
 Significance and Management of Joint Pain C J Smyth and R H Freyberg—p 818  
 Early Unfavorable Responses to Sulfonamide Derivatives on Second Administration L M Folkers—p 823

**New York State Journal of Medicine, New York**

43 1567-1678 (Sept 1) 1943

- Physiology of Shock and of Blood Substitutes H Necheles—p 1601  
 Laboratory Aspects of Preparation and Biologic Control of Plasma A Milzer—p 1606  
 Principles and Methods of Desiccation of Plasma F Oppenheimer—p 1611  
 Clinical Application of Plasma S O Levinson—p 1615  
 Bilateral Blindness Due to Lesions in Both Occipital Lobes Report of 6 Cases, 4 with Necropsy H A Riley, J C Yaskin, M E Riggs and A S Torney—p 1619  
 Significance of Increased Menstrual Bleeding in Women over Forty C L Randall—p 1635

43 1679-1790 (Sept 15) 1943

- Occupational Acne L Schwartz and S M Peck—p 1711  
 Early Diagnosis of Carcinoma of Colon B B Crohn—p 1719  
 Diagnostic and Therapeutic Value of X Rays in Carcinoma of Colon E C Koenig and G J Culver—p 1723  
 Carcinoma of Large Bowel F F McGauley—p 1727  
 Peritonitis Secondary to Perforation in Carcinoma of Colon P D Allen—p 1732  
 Certain Aspects of Present Day Typhoid Epidemiology A D Rubenstein—p 1736  
 Original Studies on Internal Dynamics of Intracapsular Cataract Extraction J Goldsmith—p 1739  
 Resistance to Cure in Psychotherapy L R Wolberg—p 1751

**North Carolina Medical Journal, Winston-Salem**

4 365-422 (Sept) 1943

- One Stage Combined Abdominoperineal Resection Problems Concerned with Selecting Patients and Performing Operation C W Mayo—p 365  
 Certain Harmful Effects of the Sulfonamide Drugs J P Hendrix—p 371  
 Histoplasmosis Report of Case in North Carolina W C Thomas and R P Morehead—p 378  
 Operative Treatment of Fracture of Patella L D Baker and H J Schaubel—p 382  
 Therapy in Older Patients W M Johnson—p 385

**Oklahoma State Medical Assn Jour, Oklahoma City**

36 369-414 (Sept) 1943

- Naval Medicine L B Marshall—p 369  
 Trichomonas Vaginalis K J Wilson—p 372  
 Transmission of Diseases by Blood Transfusions A R Wiley—p 374  
 Etiology of Malignant Neutropenia W H Gordon—p 376  
 Verumontanitis Application of Sex Hormones R H Akim—p 381  
 Review of Management of Late Syphilis C P Bondurant—p 382

**Pennsylvania Medical Journal, Harrisburg**

46 1249-1408 (Sept) 1943

- Carcinoma of Right and Left Colon, Including Rectum T A Shallow and B F Haskell—p 1263  
 \*Infusions Via Bone Marrow in Children L M Tocantins, A H Price and J F O'Neill—p 1267  
 Review of Superior Hypogastric Sympathectomies Over Period of Ten Years T K Reeves and G S Lipman—p 1274  
 Minor Roentgen Therapy S J Hawley—p 1278  
 Blood Gonadotropic Determinations in Relation to Toxemia of Pregnancy H M Cohen, D A Wilson and W F Brennan—p 1282  
 Systemic Symptoms in Peptic Ulcer and Biliary Tract Disease M E Rehfuess—p 1286  
 Wilms' Tumor W J Daw—p 1293  
 Operative Treatment of Prolapse of Uterus, with End Results S A Chalfant and G R Wilson—p 1296

**Infusions Via Bone Marrow in Children**—Tocantins and his associates state that the upper third of the tibia and the lower third of the femur are the sites of choice for intramedullary infusions in infants. All infusions in their cases were made through these sites. Under no circumstances should the sternum be used in infants 3 years of age or less. The bony landmarks should be outlined before deciding on the site of the insertion of the needle. Little pressure is generally required to insert the needle into the bone of infants. The rate of injection should be slow. No material should be injected until marrow is

obtained by aspiration, but the quantity of marrow aspirated should be only about 0.1 cc or less. The ages of the children in whom the authors performed infusion via bone marrow varied between 2 days and 5 years. Forty of the group of 52 are still living. With one exception there have been no reactions following the infusion. The exception was the appearance of a superficial pustule at the point of entrance of the needle in an infant three days after an infusion through the lower portion of the femur. It was found that the dressing applied over the puncture wound had been kicked away and fecal matter smeared over the area. The pustule was incised, and it healed without complications. Roentgen ray examination of the underlying bone revealed no change. Although no complication such as osteomyelitis has been found, it is reasonable to expect that it may take place if aseptic precautions are not rigidly followed. Bleeding promptly ceased following the transfusion of blood through the marrow of the tibia in a hemophilic child. Physiologic or near physiologic solutions (citrate blood, plasma, isotonic solution of sodium chloride and 5 per cent dextrose solution) have been the only fluids used in this group. It seems desirable to avoid the use of hypertonic solutions by this route, in view of their possible sclerosing effect on adjacent marrow.

### Southwestern Medicine, Phoenix, Ariz

27 185-210 (Aug.) 1943

- Penicillin Historically Considered. C E Yount—p 189  
Early Treatment of Compound Fractures. R G Packard—p 194  
Results of Thoracoplasty (Five and Ten Year Review). V S Randolph—p 199

### Surgery, Gynecology and Obstetrics, Chicago

77 337-448 (Oct.) 1943

- \*Studies on Therapy of Hemorrhagic Shock. I. Effects of Iso-Osmotic and of Concentrated Serum and Plasma in Normal Dogs. H Necheles, S O Levinson, Martha Janota, R E Weston and V Weissman—p 337  
New Operative Approach to Knee Joint. K Coonse and J D Adams—p 344  
Study of Smaller Blood Vessels in Burned Dogs and Cats. R G Abell and I H Page—p 348  
Atraumatic Amputation Through Lower Thigh. Experiences with Its Use in Peripheral Vascular Disease. F Pearl and M Misrack—p 354  
Fractures of Zygoma. Report of 72 Consecutive Cases. W A Coakley and M F White—p 360  
\*Sulfanilamide Ointment Treatment of Severe Burns. E I Evans and M J Hoover—p 367  
Wound Healing—Experimental and Statistical Study. IV. Results. S A Localio, W Casale and J W Hinton—p 376  
Reasons Why Orthodox Is Better Than Kenny Treatment of Poliomyelitis. J A Key—p 389  
\*Novocain Injection for Minor Injuries in Military Service. F C Murphy and R W Postlethwait—p 397  
Effects of Rapid Compression Waves on Animals Submerged in Water. S L Clark and J W Ward—p 403  
Osteogenic Sarcoma. I. Modified Nomenclature and Review of 118 Five Year Cures. I Macdonald and J W Budd—p 413  
Gastrostomy for Retrograde Esophageal Dilatation. Leak Proof Dressing and Method of Concealing String. J J Pressman—p 421  
Arterial Blood Supply of Pancreas. J M Pierson—p 426  
Effect of Estrogenic Substance on Uterine Motility During Labor. Study of 42 Patients with Lóráud Tocograph. D P Murphy—p 433

**Iso-Osmotic and Concentrated Serum and Plasma in Hemorrhagic Shock.**—Necheles and his collaborators demonstrate that iso osmotic plasma protein solutions are more effective in the treatment of posthemorrhagic shock in normal dogs than are concentrated solutions. The relative clinical improvement, restoration of blood pressure and plasma volume, ability to tolerate further blood loss and survival times strikingly demonstrate the superiority of iso-osmotic over concentrated material. The assumption underlying the use of four times concentrated plasma protein solutions in the treatment of shock has been that these solutions can increase the plasma volume as efficiently as larger amounts of iso osmotic plasma or serum by elevating the intravascular osmotic pressure and thereby withdrawing fluid from the extravascular tissue spaces. However, when there has been considerable external hemorrhage the extravascular reserves are greatly depleted as fluid shifts into the circulation in the early physiologic compensations for the blood lost from the body. Consequently, in many of the normally hydrated animals which received the four times concentrated material the plasma volume recovery was poor in comparison with that of the animals which received comparable

amounts of protein but additional fluid in the iso-osmotic material. It is to be expected that the treatment of hemorrhagic shock with such concentrated solutions would be even less effective in animals which have been dehydrated by the withholding of water before the experimental hemorrhages.

**Sulfanilamide Ointment Treatment of Burns.**—Evans and Hoover outline a method of local treatment of burns, which they employed in 126 cases. What they have to say regarding sulfonamide ointments in burns applies only to ointments with a fatty base, because in comparative studies on the relative absorption of sulfonamides from a fatty or water dispersible base they found that dangerously high blood levels of sulfonamides resulted when a water dispersible base was employed. The ointment used was made from equal parts of sterile hydrous wool fat and cold cream to which was added sterile sulfanilamide powder to a 6 per cent concentration by weight. Sulfanilamide, rather than sulfathiazole or sulfadiazine, has been used because sulfanilamide results in less severe unfavorable reaction than do the other two sulfonamides. When the burned areas are thoroughly cleansed and debrided, a liberal quantity of the oil base sulfanilamide ointment is applied to all burned areas. Almost as soon as the burned surface is covered with sulfanilamide ointment the patient is relatively free from pain. Other local anesthetic agents are unnecessary. Sterile surgical compresses are placed over the ointment. Next a pressure dressing is applied, but not too much pressure should be exerted lest nerve injury result. The patient is put to bed on sterile sheets and proper splinting of the extremities is carried out. If a burn is seen late or is infected, warm continuous saline compresses are placed at once on the burned areas, and these are used until the burned areas are surgically clean. If the infection is severe, sulfathiazole is given by mouth and sulfanilamide powder is used locally.

**Procaine Hydrochloride Injection for Minor Injuries.**—Murphy and Postlethwait treated 100 cases of minor injuries by injecting procaine hydrochloride into the injured part as suggested by Leriche. The most tender points are identified with finger pressure and are marked with gentian violet, and the skin is prepared with tincture of merthiolate or iodine. A wheal is raised with 1 per cent procaine hydrochloride at the points marked with gentian violet. If a hematoma can be found and injected, an excellent result may be expected. When no hematoma can be located, the area in general is infiltrated and is lightly massaged to aid in diffusion. Active motion of the part is insisted on. If the joint involved is a weight bearing joint, an adhesive strapping or tight bandage is applied to encourage absorption of edema fluid and to protect the joint from further injury. The most commonly treated injuries and also the most responsive to the therapy were sprains of the ankle. Rarely was more than the initial treatment necessary except in knee and back injuries. If favorable results are not obtained after two or three injections, further injection is not indicated. Procaine hydrochloride injection decreases the period of disability, adds greatly to the comfort of the patient and permits an early return to normal activity.

### Western J Surg, Obst & Gynecology, Portland, Ore

51 349-388 (Sept.) 1943

- \*Massive Breast Hypertrophy in Adolescence. Notable Case. G A Fisher, G C Schaeffer, C E Gurney and G H Bendshadler—p 349  
Twenty Nine Years Experience with Cesarean Section. E M Lazard—p 356  
Present Status of Tetanus Prophylaxis. P Campiche—p 359  
Postoperative Intestinal Distention. H S Horton—p 368  
Recurrent Placenta Previa. P H Fried—p 377

**Massive Breast Hypertrophy in Adolescence.**—The subject of the report by Fisher and his collaborators was a girl aged 11 whose breasts within a period of seven months began and completed a development to a total of 35 pounds (16 Kg) each breast weighed 17½ pounds (8 Kg). Notable factors in this case were (a) the speed with which the condition developed, (b) the failure of endocrine therapy, (c) the absence of irregularity in the development of other sex characters or, in fact in any other department of normal growth, and (d) the necessity for, and the success of, complete surgical removal of both breasts.



## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Radiology, London

16 255-286 (Sept) 1943

- Stress or 'Fatigue' Fractures of Bone J B Hartley—p 255  
Physical Aspects of Intracavitary Radium Treatment of Carcinoma of Cervix Uteri G J Neary—p 263  
Hystero-rhaphy and Its Application to Esophageal Movement J W McFadden—p 270  
Simplified Method of Studying Volume Dose Distribution E M Ungar—p 274  
Subpubic Angle Radiologic Aspects E P Allen—p 279  
Radiographic Findings in Idiopathic Steatorrhea J F Brailsford—p 283

## Journal of Royal Naval Medical Service, London

29 83-152 (April) 1943

- Painful Foot J M J Jones—p 90  
Amnesia G V Stephenson—p 97  
Loss of Memory H Scott Forbes—p 100  
Late Complications of Abdominal Wounds F Stabler—p 103  
Skin Diseases on Ships I Whittington—p 108  
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Gingivostomatitis, with Special Reference to Vincent's Gingivitis J Cuthbert and F R P Williams—p 115  
Use of Plaster of Paris in First Aid or Emergency Treatment A I L Whitland—p 122  
Vaccination Critical Study of Intradermal Method E R Pearce and H Willoughby—p 125  
Electric Shock Therapy G A Betts—p 127

## Medical Journal of Australia, Sydney

2 121-140 (Aug 15) 1943

- Oxygen Lack and Carbon Monoxide D H LeMessurier—p 121  
Temperature Hazard and Protection R D Wright—p 122  
Muscle Balance and Its Importance in Selection of Air Crew T a B Travers—p 123  
Prevention of Psychiatric Disorders in Flying Personnel D F Buckle—p 124  
Occupational Conditions of Ear and Nose in Airmen N E H Fox—p 126  
Problems of Acceleration W J Simmonds—p 127

2 141-160 (Aug 21) 1943

- Head Injuries A B Nord—p 141  
Radiography of Head Injuries E W Frecker—p 144  
Neurosurgical Sequelae of Head Injuries W L Reid—p 146  
Cerebral Concussion G Phillips—p 148

## Proceedings of Royal Society of Medicine, London

36 503-572 (Aug) 1943 Partial Index

- \*Scottish Diphtheria Immunization Campaign (1941 to 1942) A Russell—p 503  
Electromyography in Clinical Medicine G Weddell—p 513  
Phases of Maturation, Fertilization and Early Development in Man W J Hamilton, Gladys H Dodds and Josephine Barnes—p 525  
Some Recent Work on Investigation and Treatment of 'Mémère's' Disease F E Cawthorne and C S Hallpike—p 533  
Chest Clinician's Viewpoint of Radiographs of Chest G S Todd—p 565

**Scottish Diphtheria Immunization Campaign (1941 to 1942)**—According to Russell, Scottish children were unprotected against diphtheria at the end of 1940, except for a small percentage and the country was experiencing a widespread epidemic. The immunization effort began only when the epidemic was approaching its peak. The immunization campaign has achieved a considerable degree of success, approximately 800,000 children having been inoculated. In Scotland diphtheria is at present much more an urban than a rural health problem. The gravis type of *Corynebacterium diphtheriae* is now the predominant type throughout a considerable part of the country. A definite increase in the incidence of diphtheria in the over 15 years group has taken place within the past three years. The diphtheria mortality figures for the past twelve months are much lower than any previously recorded in Scotland. A comparison of the diphtheria cases and deaths recorded in the nonimmunized and in the immunized groups of the population indicates that the chances of attack and death among the former are much higher than among the latter. On the average, with present diphtheria immunization methods a child is not so effectively protected against attack as against death.

## Prensa Medica, Argentina, Buenos Aires

30 1169-1214 (June 30) 1943 Partial Index

- \*Tumoral Form of Pulmonary Mycosis R Denis, A P Heudtlass and J A Mari—p 1189  
Infantile Paralysis D Vivoli—p 1199  
Surgery of Biliary Ducts A N Canónico—p 1201

**Neoplastic Form of Pulmonary Mycosis**—Denis and his collaborators report the clinical history of a patient who for seven years presented periodic hemoptysis as the only complaint. The x-ray examination of the lungs showed a round shadow with air in the upper part located in the infraclavicular area of the left lung. Bacteriologic examination of the sputum revealed the presence of *Aspergillus fumigatus*. The intradermic test with trichophyton was intensely positive. Relief of hemoptysis followed iodine treatment. As far as the authors know, this is the second case in the literature of the neoplastic form of pulmonary mycosis.

## Revista de la Asoc. Med. Argentina, Buenos Aires

57 219-280 (May 15-30) 1943 Partial Index

- \*Arterial Hypertension in Pregnancy Magnesium Sulfate Therapy D E Nöbling and O M Althabe—p 245  
Azosulfamide and Tannic Acid in Burns A Giuliano—p 254

**Arterial Hypertension in Pregnant Women**—Nöbling and Althabe administered magnesium sulfate to 65 pregnant women with arterial hypertension. The drug was given once or twice a day intravenously in doses of from 1 to 3 cc. of a 50 per cent solution in 10 or 20 cc of hypertonic dextrose solution, or intramuscularly in doses of from 5 to 10 cc of a 25 per cent solution. Physical and mental rest, sedatives and a proper diet were maintained at the same time. The results were favorable in 5 out of 8 patients with intercurrent eclampsia, in 17 out of 34 patients with preeclampsia, in 8 out of 13 instances of essential hypertension and in 5 out of 6 cases of vascular or renal disease. The blood pressure of these patients came down to normal or almost normal levels. In the remaining patients the results were either mediocre or nil. Diuresis increased in all of the patients, headache and edema diminished and the renal symptoms were improved. The treatment was given continuously up to the onset of labor. After its discontinuation for a short time a rise in the blood pressure took place and indicated resumption of the treatment. The drug is contraindicated in cardiac insufficiency of pregnant women. Otherwise it is harmless for the mother and for the fetus.

## Semana Medica, Buenos Aires

50 157-216 (July 22) 1943 Partial Index

- \*Roentgen Therapy of Leukemia A Lemos Ibañez—p 157  
Early Puberty Sara Schmitman and R Pesino—p 172  
Rational Treatment of Infected Wounds R Galbati—p 189

**Roentgen Therapy of Leukemia**—Lemos Ibañez employed roentgen therapy in 23 cases of chronic leukemia and in 2 cases of acute leukemia. The dose of irradiations for the spleen was 100 roentgens for adolescents and 200 roentgens for adults. A similar dose was used in irradiating the lymph nodes and the bones. Irradiations were given two or three times weekly until the leukocytes were lowered to 15,000 or 20,000. Irradiation courses were repeated every two or three months. The irradiations were discontinued at any time if acute symptoms such as high fever, hemorrhage, cardiac or renal insufficiency or infection appeared. A progressive diminution of the erythrocytes was regarded as an indication for a temporary discontinuation of roentgen irradiation and for repeated blood transfusions, arsenicals, liver, iron and vitamin therapy. Teleroentgenotherapy was practiced on patients whose blood became radio-resistant after a series of local treatments. The teleroentgen treatments were given twice weekly in doses of 10 or 15 roentgens for each treatment. The results were good in cases of chronic leukemia, either myeloid or lymphatic. An apparent clinical cure followed each series of roentgen treatments although the response on the part of the blood was slower and less complete as the disease progressed to its fatal issue. The average prolongation of life was three to four years. Roentgen therapy is contraindicated in acute leukemia. It is contraindicated also in myeloid metaplasia of the spleen compensating for aplasia of the bone marrow.

## Book Notices

**Life Is Too Short** An Autobiography By C Kay Scott (Frederick Creighton Wellman) Cloth Price \$1.50 Pp 348 Philadelphia & New York J B Lippincott Company 1913

**A Surgeon's World** An Autobiography By Max Thorek M.D. Cloth Price \$3.75 Pp 410 Philadelphia & New York J B Lippincott Company 1913

During the last few years there has been a veritable plethora of biographies and autobiographies of physicians, more it would seem than the reading public could easily absorb. Nevertheless the lives of some are so replete with unusual incident, soregarious in their multiple associations with personalities of importance, so extraordinary because of difficulties overcome, that they have the quality of romance.

C. Kay-Scott, who feels that *Life Is Too Short*, had a remarkable career as a medical missionary in Africa, a dean of two schools of tropical medicine, an auditor for the Singer Sewing Machine Company in Brazil, a mining engineer in the manganese mines, an entomologist, a novelist, a painter and a fine artist. He had also multiple marriages and no doubt innumerable other romantic interludes. His ability to tell the story is somewhat inhibited by a tendency to assume on the part of

reader an interest in erudite affairs of science similar to his own and by a failure frequently to interpret terminology which has interest only for the scientist. His book has, however, much of journalistic value. He deals with times and men and places that are familiar to those of the medical world.

The amazing aspect of the career of Creighton Wellman is the remarkable success that he achieved in a variety of vocations. He made a living for himself and for his family as a physician, as a teacher, as a businessman, as an engineer, as a writer and as a painter—and in one occupation at a time. The success that he achieved was of a high order, although obviously not of the highest order. Reference however to his many pamphlets and literary contributions is to be found in many a scientific work. Under the name of Creighton Wellman as a scientist he appeared in volume IX of *Who's Who in America*, and under the name of Cyril Kay-Scott with the pseudonym of Frederic Creighton, he appeared as an artist in volume XIX of *Who's Who in America*. Thus he achieved at least this modicum of fame in two different professions.

The versatility as shown by his innumerable careers and his philosophy of life as exemplified in the biographies make him a subject of considerable interest to all those who enjoy reading autobiography. His book has in it much that will interest even the casual reader and certainly much to attract the medical reader.

The career of Max Thorek as told in his autobiography has in it also somewhat of variety, beginning with "Birth Abroad," proceeding to "Education in the United States" (largely financed by the avocation of musician), next moving through the period of internship into a career as a surgeon and an avocation as a photographer in which he has risen to great fame. The very special character of the practice of Dr. Thorek brought him into contact with people in the field of the theater, with Frederick Cook the explorer, with musicians and with the underprivileged. He has had special interest in writing so that several successful works in the field of surgery bear his name.

Outstanding in the life of Dr. Thorek is his sense of drama and a flair for the unusual. His research is devoted largely to such problems as those of rejuvenation and reactivation in the field of male sexuality, to plastic surgery of the breast, to electrical coagulation in the removal of the gallbladder. He traveled widely principally, however, as a means of further education in order that he might meet men who had done work in these fields abroad.

One is impressed most, however, in reading this autobiography, with a feeling that the author is in a state of continuous wonderment at the success that has come to one who rose from the depths and who has had constantly to fight his way upward. Whether or not such conflict was the inevitable concomitant of

the nature of the author's career, so that the difficulties were somewhat his own in their origin, is a question that each reader will have to determine for himself.

Written obviously for the public rather than for the strictly medical reader, there is much in the book from a medical point of view that will be better understood by the physician than by the lay reader. In the course of his autobiography Dr. Thorek philosophizes on the glands, euthanasia, whether to tell or not to tell the patient, the standards of medical education and of surgery in the United States and many similar subjects. The writing is florid. The author seldom uses the simple word when the larger one comes to his mind. The so-called oatmeal poultice of aluminum potassium nitrate as a means of treatment of osteomyelitis developed by La Porte had a brief day in medical literature and is now gone. The Steinach operation for reactivation and Voronoff's transplants have never achieved medical respectability. The general medical attitude toward cosmetic plastic surgery is still hesitant and the exact place occupied today by the International College of Surgeons is not yet clear. In any event, there still prevails an attitude of suspicion and doubt by the International Society of Surgery in relationship to the International College.

In *'Who's Who in America'* appears also the biography of Dr. Thorek with the bare skeleton of his life. His autobiography makes that skeleton come alive. It indicates success in surgery if recognition by medical organization here and abroad and successful authorship in surgery are a true measure of such accomplishment. The story is worth reading.

**Advances in Internal Medicine** Volume I Edited by J. Murray Steele M.D. Welfare Hospital, New York University Division Welfare Island N. Y. and others. Cloth Price \$1.50 Pp 292 with illustrations. New York: Interscience Publishers, Inc. 1912.

The subjects considered in this volume include the use of the Miller-Abbott tube in disorders of the gastrointestinal tract, the use of insulin and protamine zinc insulin in diabetes, several chapters on the sulfonamides, chapters on influenza, hypertension, nephrosis and riboflavin deficiency. The various chapters constitute essentially reviews of the currently available literature on the subject prepared in each instance by men whose names are familiar as leaders in the fields concerned. Thus Keefer is responsible for one of the chapters on the sulfonamides and Irvine Page for the chapter on hypertension. Research has been so active in these subjects that almost every chapter could stand a few additional paragraphs at this time. However, for those who wish to bring themselves reasonably well up to date on the subjects concerned, the book will be exceedingly useful.

**Primer of Allergy** A Guidebook for Those Who Must Find Their Way Through the Mazes of This Strange and Tantalizing State. By Warren T. Vaughan M.S. M.D. Second edition. Cloth Price \$1.75 Pp 176 with illustrations by John P. Tillery. St. Louis: C. V. Mosby Company 1913.

Dr. Vaughan's contributions to the literature of allergy are widely circulated. This little handbook will be most useful to any patient who suffers more or less with the symptoms of sensitization to foods or other substances. The illustrations, which include a number of excellent cartoons by Webster, and the humor of the text make it among the most readable of all the available books in the field concerned. There are tables of questions and answers which are most useful in replying to the many problems that arise so frequently in the practice of doctors who care for these patients. Notwithstanding the effort of the articles to simplify these explanations, the book will mean little to those who have not had a reasonably good general education.

**Shipboard Medical Practice** A Handbook of Ship Sanitation and Emergency Medical Aid at Sea. By W. L. Wheeler Jr. M.D. Medical Director Grace Line, Inc. Fabrikoid. Price \$1 Pp 114 with 14 illustrations. New York: Cornell Maritime Press 1913.

The author, who is medical director of the Grace Line, has had much experience in the medical problems arising at sea. The book is essentially a work on first aid but includes as well a good deal of drug therapy such as may be demanded under emergency conditions. There is a glossary and a list of supplies such as might be required on board ship, also forms for reporting cases.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### DIFFERENTIATION OF VIRAL PNEUMONIAS

To the Editor—Is it possible to differentiate infallibly between the so called virus pneumonia and an influenzal pneumonia? I realize that the influenza is also a virus infection.

Paul S. Ross, Captain, M. C., A. U. S.

ANSWER—The answer to this question depends on what the questioner means by using the term "influenzal pneumonia." Three forms of pneumonia have been so named: (1) the primary viral form caused by the filtrable viruses influenza A or influenza B, which is the only form properly called influenzal pneumonia, (2) the primary bacterial form caused by *Haemophilus influenzae*, or Pfeiffer's bacillus, and (3) various secondary bacterial pneumonias caused by pneumococci, hemolytic streptococci, staphylococci and others, either alone or in combination, occurring as a superinfection during true influenza.

1 True viral influenzal pneumonia as caused by viruses A or B is apparently uncommon and as far as is known has not been reported in man since the discovery of these viruses after 1933 or since the establishment in 1938 of "virus" pneumonia as a syndrome. Viral influenza pneumonia occurs commonly in experimentally infected animals. Cases of nonbacterial pneumonia were reported by Goodpasture in the epidemic of 1918-1919 presumably of influenza.

Clinically, viral influenza pneumonia cannot be differentiated from the current viral pneumonias. Differentiation could be made only by isolating the viruses of influenza or by the demonstration of their activity with the chicken erythrocyte agglutination test of Hirst or by the complement fixation reaction. Certain other forms of viral pneumonia can likewise be identified by the isolation of the respective causative viruses or by the complement fixation test (Reimann, H. A., Havens, W. P., and Price, A. H. *Etiology of Atypical ["Virus"] Pneumonias*, *Arch. Int. Med.* 70:513 [Oct.] 1942).

2 *Haemophilus influenzae* pneumonia can be diagnosed by identifying the Pfeiffer bacillus in predominance in the sputum, in the blood or in the lung substance.

3 The secondary bacterial pneumonias may be recognized by the clinical characteristics of the specific forms or mixed forms as described in modern textbooks and by the isolation of the causative bacteria from the sputum, blood, lung or other exudates. Leukocytosis is one of the simplest, fairly reliable differential factors in these infections as compared with the viral pneumonias.

### PROGNOSIS IN CUSHING'S SYNDROME

To the Editor—in general what is the prognosis in so-called Cushing's syndrome with insulin resistant diabetes?

M. D., Massachusetts

ANSWER—The prognosis for a patient with Cushing's syndrome depends primarily on the underlying etiologic factors. Carcinoma and benign hyperplasia of the adrenal cortex and basophilic adenoma of the anterior pituitary are responsible for nearly every case. If the syndrome is the result of carcinoma of the adrenal cortex the prognosis is that of the carcinoma; it should be emphasized, however, that the virilizing adrenal carcinoma produces symptoms early in its development, often when it is still well localized and amenable to complete surgical extirpation. If the syndrome is associated with benign cortical hyperplasia or basophilic adenoma of the anterior pituitary, the prognosis is directly related to the severity and rate of progression of the symptoms, particularly hypertension and diabetes. Ordinarily a fully developed clinical picture is associated with a poor prognosis. In Cushing's series of 17 patients the average duration of life from onset of symptoms to death was five years. However, in some cases in which the symptoms are stationary, the life expectation is much longer. Little has been done therapeutically for the nonmalignant group; recent work by Albright, Parson and Bloomberg (*J. Clin. Endocrinol.* 1:375 [May] 1941) involving the use of testosterone promises to be of some help.

### CHILLS AND JAUNDICE IN PATIENT TAKING ACETYL-SALICYLIC ACID AND PHENOBARBITAL

To the Editor—I am anxious to know whether either acetylsalicylic acid or phenobarbital might be a causative agent in producing an acute hepatitis with jaundice. My patient has episodes of jaundice following chills. At these times the white cell count is around 20,000 and the icterus index is 33 per cent. There is no nausea or vomiting and only questionable tenderness of the liver. The liver edge is palpable and seems about normal or possibly a little firm. He has some pain occasionally under the left costal edge but not with these attacks. The spleen is not palpable or enlarged to percussion. Between attacks his white cell count is normal and he feels well. The attack subsides quickly and the fever (101 F) disappears within twenty-four hours. He is highly sensitive to the brucella skin test and has been treated for undulant fever for many years. There is no anemia (hemoglobin 82 per cent Sahli, red cell count 5,000,000), and the reticulocyte count following attacks is 0.5 per cent. The stools are always normal in color. He has been taking acetylsalicylic acid and phenobarbital both several times a day for several years.

George L. Walker, M.D., Griffin, Ga.

ANSWER—The fact that this patient has episodes of jaundice and chills and has been taking both acetylsalicylic acid and phenobarbital several times a day for several years would make it difficult to assume that the drugs are causative unless on the basis of cumulative action. Various drugs, toxins and chemicals that are ordinarily nontoxic in therapeutic use may become toxic for certain human subjects who have been rendered more vulnerable by the presence of infectious diseases. There is no evidence in the literature that acetylsalicylic acid causes jaundice with chills and fever. However, there is evidence that some of the barbiturates and specifically phenobarbital may cause the development of sharp febrile reactions with some patients developing pronounced jaundice (Sollmann, *Torald Textbook of Pharmacology*, ed. 6, 1942, p. 779) and occasionally an instance is reported in which death presumably resulted from large doses of phenobarbital with the liver showing definite fatty degeneration. It is known that experimental acute liver damage produced by carbon tetrachloride greatly increases the susceptibility of the rat to quickly acting barbiturates such as phenobarbital.

Conceivably the phenobarbital may serve as a hepatic toxic agent for this patient, but there is no evidence that acetylsalicylic acid could be causative of such liver damage. The obvious course to follow would be to have the patient stop this medication for a considerable period of time and then to resume it on a clinical experimental basis and observe whether it does produce chills, fever and jaundice.

### MICROSCOPIC WORMS OBSERVED IN URINE SPECIMENS

To the Editor—For the past few months in the routine examination of the urine of patients who gave no urinary symptoms I have found several live, eel-like microscopic worms, their length occupying about half the microscopic field under low power. These worms have been found in children as well as adults, male and female. The textbook description (Todd and Sanford's *Clinical Diagnosis by Laboratory Methods*) of this worm is *Anguilula aceti*. The books speak of it as contamination from the use of vinegar douches or from a bottle that contained vinegar. As a matter of fact these urines in which the worm was found were all freshly voided in a clean glass of my office. The questions are: Why haven't I seen a similar worm in the past thirty odd years of routine urine examination of every patient? What is the significance of its presence?

I. F. Fleiss, M.D., New York

ANSWER—The opinion is general among several directors of clinical laboratories that organisms such as those described are not observed in the urine if careful rules of cleanliness are followed. Probably these organisms are due to contamination of the glass in the office. It has been observed in one laboratory that urine collected in bottles that had been washed occasionally contained such organisms, but since the use of prepared paper containers they are never found. It is evident that glass may become contaminated, even though it appears to be clean on gross inspection.

### LECITHIN

To the Editor—In regard to the item in *Queries and Minor Notes* regarding lecithin which appeared in *The Journal*, September 25, I feel sure that it was not the intent of *The Journal* indirectly to promote a patent preparation such as the so-called "lecithin hydrate" (U. S. patent 2,090,537). The lecithin used in prepared foods such as bread, cake, 0.01 to 0.3 per cent is preponderantly soybean lecithin, substantially free from moisture, comprising a carrier of about 30 per cent soybean oil from moisture, comprising a phosphatide complex consisting of lecithin, cephalin and associated with a phosphatide. Lecithin is utilized commercially because liposol (inositol phosphatide). Lecithin is utilized commercially because of its colloidal and antioxidant properties. This is the same soybean lecithin which has been used successfully in the treatment of psoriasis and hypercholesterolemia, where the quantities administered daily vary from 9 to 15 Gm.

A. Scharf, American Lecithin Company, Inc.

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## REPORT OF REEXAMINATION OF 4,994 MEN DISQUALIFIED FOR GENERAL MILITARY SERVICE

BECAUSE OF THE DIAGNOSIS OF CARDIO-  
VASCULAR DEFECTS

A COMBINED STUDY MADE BY SPECIAL MEDICAL  
ADVISORY BOARDS IN BOSTON, CHICAGO, NEW  
YORK, PHILADELPHIA AND SAN FRANCISCO

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National Research Council

Much has been written about the physical fitness of men for active military service, and in many countries criteria have been drawn up to guide examiners in the choice of suitable candidates. Borderline cases and the range of the normal have furnished abundant material for discussion, but in the cardiovascular field, in particular, there is still a great deal to be learned. Two aspects of the problem which might aid in its clarification have not been explored adequately, namely the reexamination, by expert cardiologists, of a relatively large group of registrants rejected for cardiovascular defects, and a long follow-up of the borderline cases. The present study will deal with the first of these, it should also provide material for the pursuit of the second, which we hope may form the basis of another report several years hence. The major questions presented have involved the significance of heart murmurs, the critical levels of blood pressure and heart rate, the importance of certain arrhythmias and the

A more detailed account of the individual city reexamination studies embodied in their reports will be published in a forthcoming issue of the American Heart Journal.

The work described in this paper was done under a contract, recommended by the Committee on Medical Research between the Office of Scientific Research and Development and the University of Pennsylvania and under the auspices of National Headquarters Selective Service System Washington D.C.

Col Leonard G. Rowntree, chief of the Medical Division, National Headquarters, Selective Service System, furnished aid in initiating and continuing this study. The medical directors of Selective Service in the localities in which the examinations were made rendered invaluable help without which the work could not have been carried forward successfully. This cooperation was extended by Lieut. Col. Victor D. Washburn, medical officer for Massachusetts; Lieut. Col. E. Mann Hartlett, medical officer for Illinois; Col. Samuel J. Kopetzky, chief of the Medical Division in New York City; Lieut. Col. Edgar S. Everhart, medical officer for Pennsylvania; and Lieut. Col. Bert S. Thomas, medical officer for California. The chairmen of the special medical advisory boards in Chicago and San Francisco, Drs. G. K. Fenn and William J. Kerr, respectively, submitted full reports the contents of which form part of this combined study. All who participated in the project—physicians, secretaries, technicians and aides—gave generously of their time and services. Miss Dorothy Kurtz, supervisor of the Record Department, Presbyterian Hospital, New York City, assisted in the preparation of the combined statistical tables.

diagnosis of neurocirculatory asthenia. Chamberlain<sup>1</sup> in England and Markson and Gethner<sup>2</sup> in this country, who reported on the analysis of cases referred for cardiovascular opinion by recruitment medical boards, were confronted by similar difficulties.

Following a statistical survey made by the Selective Service System, it was estimated that 100,000 registrants of the first 2 million examined were unqualified for general military service because of cardiovascular diseases. Only for defects of the teeth and eyes were greater numbers rejected. One million of the first 2 million examined were rejected for all causes.<sup>3</sup>

The group disqualified for disorders of the heart and circulation thus accounted for approximately 10 per cent of all rejectees. This rate seemed excessive for men between the ages of 18 and 38 years. In order to discuss this problem a meeting of the Subcommittee on Cardiovascular Diseases of the National Research Council was held at the National Academy of Sciences Building in Washington, D.C., on June 27, 1942. The following were present: Drs. Paul D. White, chairman, Edgar van Nuys Allen, Robert L. Levy, William D. Stroud and Irving S. Wright, all of the subcommittee; Brig. Gen. C. C. Hillman, Col. H. J. Morgan, Lieut. Col. J. G. Knauer and Capt. L. H. Warren, representing the Army; Lieut. Commander Ashton Graybiel, representing the Navy; Dr. O. F. Hedley, representing the U.S. Public Health Service; Col. L. G. Rowntree, Col. R. H. Eanes, Major Robert Bier and Major O. H. Folk, representing the Selective Service System; Drs. L. H. Weed, W. C. Davison, S. V. Larkey, T. R. Forbes, G. A. Carden and Commander E. H. Cushing, representing the National Research Council; Drs. A. N. Richards and E. C. Andrus, representing the Committee on Medical Research, and Dr. R. A. Wolford, representing the Veterans' Administration.

As a result of this conference a letter was sent to Major Gen. Lewis B. Hershey, Director of Selective Service, by Drs. Levy, Stroud and White, proposing a project for the reexamination, by boards of cardiologists in each of five cities, of 1,000 registrants rejected for cardiovascular reasons. Through such a study it seemed possible, and indeed probable, that a number of men might be salvaged, to the advantage of both the Army and themselves, and that information might be gained which would prove useful in subsequent induction examinations. The proposal was promptly approved by General Hershey, and it was agreed that Selective Service would stand the expense of necessary laboratory examinations and the printing of record forms.

<sup>1</sup> Chamberlain E. N. The Recruit's Heart. Brit. M. J. 1: 354 (March 8) 1941.

<sup>2</sup> Markson, D. E., and Gethner, M. P. An Analysis of Cardiac Abnormalities in 460 Selectees. Illinois M. J. 82: 350 (Nov.) 1942.

<sup>3</sup> Rowntree L. G. Rehabilitation and Prehabilitation. J. A. M. A. 119: 1171 (Aug. 8) 1942.

The remaining cost was defrayed by a contract between the Office of Scientific Research and Development and the University of Pennsylvania, recommended by the Committee on Medical Research with the advice of the National Research Council. Dr Stroud was appointed chairman of the study.

PLAN OF PROCEDURE

It was decided that the pilot tests should be made in each of five cities with a large university medical center where a sufficient number of cardiologists would be available. Boston, Chicago, New York, Philadelphia and San Francisco were designated for the study of 1,000 rejects each. The state directors of

Pardee, Howard F Shattuck and Robert L Levy, chairman Assistant examiners, Drs John M Baldwin Jr, Adolph R Berger, Edwina Campbell, John L Caughey Jr, William M Hitzig, Donald D Parker and Grant Sanger Philadelphia Drs Samuel Bellet, George C Griffith, Thomas M. McMillan, George Morris Piersol and William D Stroud, chairman San Francisco Drs E L Bruck, F L Chamberlain, J K. Lewis, J M Read, J J Sampson, Paul Giebe, Mayo H Soley, Earl R Miller and William J Kerr, chairman Also resident staff and interns in medicine and roentgenology

A special record form was designed and was used in all the examinations. It proved satisfactory and is herewith reproduced (fig 1)

TABLE 1—Result of Examination by Special Boards

	Number of Cases						Percentage of Total Cases Examined					
	Total Five Cities	Boston	Chicago	New York	Philadelphia	San Francisco	Total Five Cities	Boston	Chicago	New York	Philadelphia	San Francisco
Total cases examined	4,991	1,000	1,000	1,000	1,035	959	100.0	100.0	100.0	100.0	100.0	100.0
Cases resubmitted	883	183	33	192	171	274	17.3	18.3	3.3	19.2	16.5	28.6
Cases finally rejected	1,111	512	96.2	805	864	685	82.7	81.2	96.2	80.8	83.5	71.4

TABLE 2—Result According to Original Rejection Diagnoses (By Local Board or Induction Station)

Original Diagnosis	Number of Cases										Percentage of Each Diagnosis Finally Resubmitted				
	Four Cities*			Boston			Chicago			New York			Philadelphia		
	Finally			Finally			Finally			Finally			Finally		
	Total	Resubmitted	Rejected	Total	Resubmitted	Rejected	Total	Resubmitted	Rejected	Total	Resubmitted	Rejected	Total	Resubmitted	Rejected
Total cases examined	1,035	389	3,116	1,000	183	812	1,000	33	962	1,000	192	808	1,035	171	864
Rheumatic valvular heart disease	2,311	299	2,045	503	79	421	659	14	645	635	109	526	647	97	550
Hypertension	226	151	723	263	32	211	141	5	136	192	43	149	260	33	227
Tachycardia	275	51	221	31	2	29	99	8	91	66	27	39	49	11	38
Coronary heart disease	77	7	70	31	5	26	17	0	17	18	1	17	11	1	10
Cardiac hypertrophy	197	19	178	63	0	63	61	2	59	55	12	43	10	5	5
Rheumatic fever, recent	13	4	9	9	3	6	1	0	1	1	0	1	2	1	1
Heart disease, unspecified	380	71	309	96	27	69	159	12	147	87	20	67	33	12	21
Neurocirculatory asthenia	92	22	70	76	17	59	0	0	0	9	1	8	7	4	3
Cardiac arrhythmia	50	6	44	6	2	4	13	1	12	8	1	7	3	2	1
Cardiac neurosis	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0
Syphilis of aorta	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0
Aneurysm of aorta	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0
Aneurysm other than aorta	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0
Heart disease due to chest deformity	3	0	3	1	0	1	0	0	0	2	0	2	0	0	0
Coronary heart disease	3	1	1	3	1	2	1	0	1	1	0	1	0	0	0
Electrocardiographic abnormality only	5	0	5	0	0	0	5	0	5	0	0	0	0	0	0
Peripheral vascular disease	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0
Pericarditis	4	0	4	1	0	1	3	0	3	0	0	0	0	0	0
Nephritis (persistent albuminuria)	9	0	9	6	0	6	1	0	1	0	0	0	2	1	1
Hyperthyroidism	13	1	12	2	0	2	9	0	9	0	0	0	2	1	1

\* No figures available for San Francisco

Selective Service in New York, Pennsylvania, Massachusetts, Illinois and California appointed the following special medical advisory boards for this project

Boston Senior examiners, Drs Norman H Boyer, Laurence Ellis, Burton E Hamilton, Samuel A Levine and Paul D White, chairman Assistant examiners, Drs Mandel E Cohen (also neuropsychiatrist), James Currens, Elwyn Evans and Conger Williams

Chicago Drs Joseph A Capps, N C Gilbert, Max Gethner, Sidney Strauss, J Roscoe Miller, George H Coleman, Frank B Kelly, Lawrence E Hines, Stanley Gibson, Carl O Rinder, Howard Wakefield, G K Fenn, chairman, and James B Herrick, honorary chairman

New York Senior examiners, Drs Arthur C DeGraff, Clarence E de la Chapelle, B S Oppenheimer, Harold E B

The results of the study are summarized in tables 1 to 9

COMMENT

1 General Plan of Reexamination—The reexamination of men rejected for military service on the basis of cardiovascular defects or neurocirculatory asthenia was undertaken with four purposes in mind. In the first place, a more detailed analysis of the problems in cardiovascular diagnosis and of the range of the normal heart was desired to point the way for further follow-up study and research. Secondly, it was important to know the possible amount of salvage of men for military service in this particular field. Thirdly, a comparison of the opinions of cardiovascular experts with those of



the examiners in the local boards and induction stations concerning large groups of men thought to have heart disease was desired as a pioneer research to determine the feasibility of such reexaminations in other special medical fields, or in the same field in other parts of the country. And finally, an additional though minor, point of interest was a brief inquiry as to the ability of the men whose rejections were confirmed to carry on in civilian life.

A sample of 5 000 men was considered adequate for this reexamination. The northeast part of the country (Boston, New York and Philadelphia) the middle west (Chicago) and the far west (San Francisco) were represented. It had been hoped to include one of the southern cities, but this did not prove to be feasible although it would be of interest some day to make such a survey in the South. An extension of the study to include the country more generally that is by individual states, cities or districts, was thought of as a later

politan areas with the helpful cooperation of the local board examiners and of the central induction stations. The majority of the men (about two thirds) had been turned down by the induction stations in the year 1942. Several weeks, ranging from four to eight, were required for completion of the reexaminations in the different cities, and from 40 to 110 men were examined at the different sessions, averaging 60 to 70 at a time. The examinations were usually conducted in the evenings, two or three days a week, and on Saturday afternoons.

The actual examinations were carried on mainly in the recumbent position but often in the upright position too, for comparison, and by at least two examiners. If men were considered suitable for resubmission as 1A they were checked by at least two of the senior examiners and were routinely electrocardiographed and submitted to the x-ray department of the various hospitals for teleoroentgenograms (2 meter films) before

TABLE 3—Final Diagnoses in Cases Rejected by Special Boards

Diagnoses	Number of Cases						Percentage of Cases Finally Rejected					
	Total Five Cities	Boston	Chicago	New York	Phila- delphia	San Fran- cisco	Total Five Cities	Boston	Chicago	New York	Phila- delphia	San Fran- cisco
Total finally rejected	4 131	812	962	808	864	685	100.0	100.0	100.0	100.0	100.0	100.0
Rheumatic valvular heart disease	4.6	41.0	67.0	54.5	56.0	27.1	20.9	51.1	70.3	67.4	66.9	39.0
Hypertension	1 030	240	280	150	200	212	25.0	30.7	24.8	10.7	23.1	30.9
Tachycardia	189	42	75	48	8	26	4.6	3.0	7.8	5.0	0.9	3.8
Congenital heart disease	183	40	28	20	18	63	4.4	5.5	2.9	3.0	2.1	9.2
Syphilis of aorta	17	0	5	7	3	2	0.4	0.0	0.5	0.9	0.3	0.3
Aneurysm other than aorta	1	0	0	1	0	0	0.0	0.0	0.0	0.1	0.0	0.0
Cardiac enlargement only	0	1	0	0	0	26	1.8	1.5	0.9	2.2	1.0	3.8
Myocarditis, chronic rheumatic	6	0	1	5	0	0	0.1	0.0	0.1	0.0	0.0	0.0
Coronary heart disease	0	1	0	2	0	3	0.1	0.1	0.9	0.2	0.0	0.4
Heart disease, unspecified	113	14	28	1	0	70	2.7	1.7	2.9	0.1	0.0	10.2
Neurocirculatory asthenia	704	78	11	31	54	30	17.0	9.6	1.1	3.8	0.3	4.4
Auricular fibrillation paroxysmal	4	1	1	2	0	0	0.1	0.1	0.1	0.2	0.0	0.0
Auricular fibrillation permanent	30	1	11	11	0	4	1.2	1.8	1.1	1.4	1.0	0.0
Paroxysmal tachycardia	17	3	1	0	0	0	0.4	0.0	0.1	0.0	0.0	0.0
Cardiac arrhythmia only*	10	0	3	3	0	7	0.4	0.0	0.5	0.4	0.0	1.0
Cardiac neurosis	11	0	0	0	0	0	0.3	0.0	0.0	0.0	0.0	0.0
Recent rheumatic fever	11	0	4	0	0	1	0.3	0.7	0.4	0.0	0.0	0.4
Pericarditis	4	0	0	0	0	4	0.1	0.0	0.0	0.0	0.0	0.0
Heart disease due to chest deformity	10	2	0	5	0	3	0.2	0.2	0.0	0.6	0.0	0.4
Electrocardiographic abnormality only	32	0	0	5	3	13	0.8	0.7	0.0	0.6	0.3	1.9
Peripheral vascular disease	3	0	0	1	0	2	0.1	0.0	0.0	0.1	0.0	0.3
Nephritis (persistent albuminuria)	6	1	1	0	0	4	0.1	0.1	0.1	0.0	0.0	0.6
Hyperthyroidism	14	1	10	1	0	2	0.3	0.1	1.0	0.1	0.0	0.3

\* Exclusive of paroxysmal tachycardia

possibility dependent on the results of this preliminary study but was not definitely planned.

**2 Personnel, Technic and Arrangements for Reexamination.**—Following the criteria of admission to the Army outlined in Mobilization Regulations (MR) 1-9, paragraphs 60-67, and a directive sent out by the chairman of this particular research committee the technic of reexamination was essentially the same in the five cities. Examinations were carried out in large general hospitals where the facilities were adequate (Massachusetts General Hospital in Boston, St Luke's Hospital in Chicago, Presbyterian Hospital in New York City, Pennsylvania Hospital in Philadelphia and University of California Hospital in San Francisco). It is evident from the list of special examiners given in the preceding section that cardiovascular experts of recognized ability and experience were available and volunteered their services in each of the five cities. To assist them the services of junior medical volunteers were obtained, along with adequate secretarial and technical help and volunteer aides.

There was a uniformity of arrangements in plans for examination in the various cities. The men to be examined were gathered from numerous local boards in and near the central part of these various metro-

politan areas with the helpful cooperation of the local board examiners and of the central induction stations. The majority of the men (about two thirds) had been turned down by the induction stations in the year 1942. Several weeks, ranging from four to eight, were required for completion of the reexaminations in the different cities, and from 40 to 110 men were examined at the different sessions, averaging 60 to 70 at a time. The examinations were usually conducted in the evenings, two or three days a week, and on Saturday afternoons.

TABLE 4—Disposition and Final Diagnoses of Borderline Cases

Diagnoses	Number of Cases					
	Total Five Cities	Boston	Chicago	New York	Phila- delphia	San Fran- cisco
Total borderline cases	217	114	2	15	36	50
Cases resubmitted	103	0	2	15	36	50
Cases finally rejected	114	114	0	0	0	0
Rheumatic valvular heart disease	19	19	0	0	0	0
Hypertension "nervous"	109	70	0	8	0	31
Tachycardia "nervous"	52	27	0	6	0	10
Congenital heart disease	2	3	0	0	0	0
Cardiac enlargement only	48	10	2	0	36	0
Heart disease, unspecified	1	1	0	0	0	0
Neurocirculatory asthenia	2	2	0	0	0	0
Recent rheumatic fever	1	0	0	1	0	0
Electrocardiographic abnormality only	2	2	0	0	0	0

and as will be discussed later. An example is the incidence of a positive rheumatic history among those with rheumatic heart disease.

One of the interesting and important developments in all the cities was the frequent consultation among the examiners concerning individual cases and moot points of diagnosis. The significance of certain findings such as the systolic click and the late systolic murmur was discussed at such sessions and a number of other matters were listed for follow-up when it was agreed that there was inadequate knowledge at the present time about

is, some few over the 1,000, were examined in order to make allowances for cases unsuitable for the study. In Boston 1,015 were so examined in order to obtain 1,000, in Chicago 1,082 were examined and 1,000 retained, in New York there were 1,014 in order to obtain the even 1,000 for the study, in Philadelphia there were 1,035 with 1,035 included in the statistical study, in San Francisco 983 were examined but 24

TABLE 5—Types of Rheumatic Valvular Heart Disease in Rejected Cases  
(Final Diagnoses by Special Boards)

Specific Types	Number of Cases						Percentage of Total Rheumatic Valvular Disease					
	Total Five Cities	Boston	Chicago	New York	Philadelphia	San Francisco	Total Five Cities	Boston	Chicago	New York	Philadelphia	San Francisco
Total rheumatic valvular disease	2,178	115	678	515	569	271	100.0	100.0	100.0	100.0	100.0	100.0
Mitral regurgitation alone	75.0	71	133	100	203	26	30.3	17.1	22.9	34.9	54.1	0.6
Mitral stenosis alone *	75.0	101	50	157	131	66	30.3	24.3	43.0	28.8	23.0	24.4
Aortic regurgitation alone †	208	31	37	3	4	79	8.4	12.8	5.5	6.4	0.7	29.1
Aortic stenosis alone †	72	19	10	3	0	40	2.9	4.6	1.5	0.6	0.0	14.8
Combined mitral and aortic disease	628	101	137	160	126	64	25.4	33.8	18.8	29.3	22.2	19.9
Valve unspecified	63	10	52	0	0	6	2.7	2.4	7.7	0.0	0.0	2.2

\* Without aortic valve disease. † Without mitral valve disease.

TABLE 6—History of Rheumatic Fever or Chorea in Rejected Cases with Rheumatic Valvular Heart Disease

History	Number of Cases						Percentage of Total Rheumatic Valvular Disease				
	Total Four Cities *	Boston	Chicago	New York	Philadelphia	San Francisco	Total Four Cities *	Boston	Chicago	New York	Philadelphia
Total rheumatic valvular disease	2,178	115	678	515	569	271	100.0	100.0	100.0	100.0	100.0
History of rheumatic fever	6.1	190	93	257	89	0	23.3	45.8	14.6	47.2	15.8
History of chorea	40	9	3	21	4	0	1.8	2.3	0.4	4.4	0.7
History of both rheumatic fever and chorea	10	0	0	10	0	0	0.6	0.0	0.0	2.4	0.0

\* No figures available for San Francisco.

TABLE 7—Types of Congenital Heart Disease in Rejected Cases  
(Final Diagnoses by Special Boards)

Specific Types	Number of Cases						Percentage of Total Congenital Heart Disease					
	Total Five Cities	Boston	Chicago	New York	Philadelphia	San Francisco	Total Five Cities	Boston	Chicago	New York	Philadelphia	San Francisco
Total congenital heart disease	18	45	23	29	18	63	100.0	100.0	100.0	100.0	100.0	100.0
Patent ductus arteriosus	29	11	6	7	4	9	15.8	6.7	21.4	24.1	22.2	14.3
Patent ductus and pulmonary stenosis	1	0	0	0	1	0	0.5	0.0	0.0	0.0	5.6	0.0
Patent ductus and interventricular septal defect	4	0	0	4	0	0	2.2	0.0	0.0	13.8	0.0	0.0
Defect of interventricular septum	7	21	0	13	5	20	39.9	46.6	32.1	41.4	27.8	41.3
Defect of interauricular septum	6	3	0	0	0	1	3.3	11.1	0.0	0.0	0.0	1.6
Subaortic stenosis	5	4	0	1	0	0	2.7	8.9	0.0	3.4	0.0	0.0
Tetralogy of Fallot	2	1	0	1	0	0	1.1	2.3	0.0	3.4	0.0	0.0
Coarctation of aorta	11	2	1	0	8	0	7.7	6.7	7.1	3.4	0.0	12.7
Pulmonic stenosis	11	0	0	9	1	0	7.1	0.0	0.0	0.0	50.0	1.6
Dextrocardia	2	0	1	1	0	0	1.1	0.0	3.6	3.4	0.0	0.0
Low aortic pulmonary artery communication	1	1	0	0	0	0	0.5	2.3	0.0	0.0	0.0	0.0
Prominent pulmonary artery	1	1	0	0	0	0	0.5	2.3	0.0	0.0	0.0	0.0
Unspecified type	34	3	11	3	0	17	18.6	6.7	39.3	10.3	0.0	27.0

\* No data compiled for these in San Francisco. † One case cured by ligation.

them. It is hoped that these various teams or their successors may be able, in the course of the years to come, to study these various points further, with particular reference to the individuals examined during this study.

3 The Men Reexamined—The total number of rejectees examined in the five cities equaled 5,127 men. Of this number 133 were omitted for statistical purposes because they were rejectable for other than cardiovascular reasons, leaving 4,994 for the complete statistical study. In each city, as a rule, a surplus, that

were rejectable for other than cardiovascular reasons, leaving 959.

The great majority of the men were white but of a great variety of national stocks including English, Scotch, Irish, Dutch, French, Italian, German and Scandinavian. There were a good many Negroes (table 8), varying much in numbers in different cities. In Boston there were only 23 Negroes, in Chicago there were 66, in New York there were 90 Negroes, making up 9 per cent of the total, and in Philadelphia there were 207 Negroes, approximately 20 per cent of the

total Thus, in these four cities the Negro percentage was just under 10 (96 per cent) There were a few Chinese (1 in Boston and 5 in New York) The relatively high percentage of rejection of Negroes and Chinese is of interest The rejection of all the Chinese in Boston and New York in this series was confirmed, and the rejection of the Negroes was confirmed in a higher percentage than in the case of the white persons in the three eastern cities In Boston 22 of the 23 Negroes were rejected, compared with a proportion of

decade as compared with the fourth among the rejectees was almost exactly three to one, in contrast to the two to one total ratio of the two decades, while the ratio of the hypertensive rejectees was just reversed, being almost exactly one to three (in the third decade as compared to the fourth) There was a slight preponderance of cases of neurocirculatory asthenia in the third decade, in Boston 44 to 17, as compared with the grand total of 648 to 352 men in the third and fourth decades

TABLE 8—Distribution of Certain Final Diagnoses by Race

Diagnoses	Number of Cases																Percentage of Finally Rejected Cases Four Cities *			
	Four Cities *				Boston				Chicago				New York				Philadelphia			
	White	Negro	Chinese	Filipino	White	Negro	Chinese	Filipino	White	Negro	Chinese	Filipino	White	Negro	Chinese	Filipino	White	Negro	Chinese	Filipino
Total cases examined	3 637	363	6	4	973	23	1	0	920	66	0	4	905	90	5	0	828	207	0	0
Total cases resubmitted	543	46	0	0	187	1	0	0	33	0	0	0	180	12	0	0	133	33	0	0
Total cases rejected	3 094	317	0	4	786	22	1	0	887	66	0	4	725	78	5	0	695	174	0	0
Rheumatic valvular disease	1 979	217	5	4	407	7	1	0	620	52	0	4	494	47	4	0	458	111	0	0
Hypertension	710	131	0	0	257	12	0	0	102	47	0	0	141	18	0	0	140	54	0	0
Tachycardia	148	15	0	0	32	0	0	0	62	13	0	0	46	2	0	0	8	0	0	0
Neurocirculatory asthenia	171	3	0	0	77	1	0	0	11	0	0	0	31	0	0	0	52	2	0	0
Congenital heart disease	111	7	0	0	45	0	0	0	23	0	0	0	27	2	0	0	13	5	0	0
Syphilis of aorta	6	0	0	0	0	0	0	0	5	0	0	0	0	7	0	0	1	2	0	0
Coronary heart disease	3	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Permanent auricular fibrillation	40	0	0	0	15	0	0	0	11	0	0	0	11	0	0	0	9	0	0	0
Paroxysmal tachycardia	10	1	0	0	5	0	0	0	0	1	0	0	5	0	0	0	0	0	0	0

\* No figures available for San Francisco

TABLE 9—Miscellaneous Data

Classifications	Number of Cases						Percentage of Total Cases Finally Resubmitted or Rejected					
	Total † Four Cities	Boston	Chicago	New York	Phila delphia	San Fran cisco	Total † Four Cities	Boston	Chicago	New York	Phila delphia	San Fran cisco
Total cases finally resubmitted	580	188	38	102	171	274	100.0	100.0	100.0	100.0	100.0	100.0
Cases resubmitted with unexplained (non pathologic) apical systolic murmurs	176	48	8	90	21	*	20.0	25.5	21.1	51.6	12.3	*
Cases resubmitted with unexplained (non pathologic) aortic systolic murmurs	15	6	4	5	0	*	2.5	3.2	10.5	2.6	0.0	*
Total cases finally rejected	3 416	812	962	808	864	680	100.0	100.0	100.0	100.0	100.0	100.0
Cases in which the electrocardiogram was the deciding factor in final rejection diagnosis	48	26	5	14	3	17	1.4	3.2	0.0	1.7	0.3	2.3
Cases in which x ray examination of the heart was the deciding factor in final rejection diagnosis	90	29	12	40	9	26	2.0	3.6	1.2	6.1	1.0	3.8
Cases in which original rejection diagnosis agreed with final rejection diagnosis	2,535	592	702	639	602	*	73.0	72.0	73.0	79.1	69.7	*
Cases in which there was disagreement between original and final rejection diagnoses	631	108	113	88	262	*	18.3	20.7	11.7	10.0	30.3	*
Cases in which incomplete original diagnosis made comparison impossible	280	52	147	81	0	*	8.1	6.4	15.3	10.0	0.0	*
Original rejection diagnoses with which the final diagnoses most frequently disagreed (1) valvular heart disease (2) hypertension, (3) tachycardia, (4) neurocirculatory asthenia in order of frequency of disagreement		1 2 4	1 2 3	1 2 3	1 2 3	*						

† San Francisco excluded because data incomplete

\* No data compiled for these in San Francisco

about 7 out of 10 of the whites In Chicago all 66 were rejected, in New York 78 of the 90, and in Philadelphia 174 of the 207 There were a few Filipinos, also with a high percentage of rejection

The majority of the men were in the age group of the third decade, amounting both in Boston and in New York for example, to 65 per cent The remainder were mostly in the fourth decade, with a few just under 20 It is of interest in this connection that rheumatic heart disease was preponderant among the younger men, that is, in the third decade, in contrast to hypertension, which was preponderant in the fourth decade In Boston the ratio of rheumatic heart disease in the third

The majority of the men had been rejected by the induction stations but the figures varied widely In Boston the ratio was about 2 to 1, in New York the proportion was 506 to 494 As was to be expected, the rejections made by the induction stations were more often sustained than those which were made by the local boards

In New York the greater number (60.4 per cent) of men resubmitted for service had been rejected by the local draft boards, while the remainder (39.6 per cent) had been rejected by the induction station Many local boards contributed to this study, comprising fifty-four in Greater Boston including Cambridge, Somerville and

other adjacent cities and towns fifty-two in the city of Chicago, one hundred and twenty-three local boards scattered through the boroughs of Manhattan and the Bronx in New York 33 in the central part of Philadelphia and many local boards in San Francisco,<sup>4</sup> Berkeley and Oakland

The great bulk of all these rejectees reexamined were city dwellers, living in or close to the five metropolitan areas where the studies were carried on This was for the sake of convenience Rural draftees were therefore considerably in the minority in this study

4 *Criteria for Reclassification as 1-A and 4-F*—In general the criteria listed in Mobilization Regulations (MR 1-9) were followed quite literally in this reexam-

**SPECIAL EXAMINATION OF REJECTEES  
WITH CARDIOVASCULAR DEFECTS**

(This Form Must Be Used With Form 221)

I. GENERAL (to be filled in by the local board clerk from the registrant's latest report of physical examination, Form 220 or 221)		Do Not Write In This Space
1. Name _____	2. Order No. _____	
3. Address _____	4. Race: White <input type="checkbox"/> Negro <input type="checkbox"/> Other (specify) _____	(1)
5. Birth date _____	6. Date of rejection _____	(2)
7. Reported at: Local board <input type="checkbox"/> Induction station <input type="checkbox"/> 8. Cause of rejection _____		(3)
II. CARDIOVASCULAR EXAMINATION RESULTS (to be filled in by the examining physician. All items should be filled in. Indicate none when applicable)		(4)
10. Symptoms _____		(5)
11. Past history of:		(6)
(a) Rheumatic fever or chorea _____	(c) Heart sounds: Normal <input type="checkbox"/> Abnormal <input type="checkbox"/>	(7)
(b) Heart disease _____	(d) Murmurs:	(8)
(c) Paroxysmal tachycardia _____	Apical: Systolic <input type="checkbox"/> Diastolic <input type="checkbox"/> Presystolic <input type="checkbox"/>	(9)
12. Present findings:	Aortic: Systolic <input type="checkbox"/> Diastolic <input type="checkbox"/> Other (specify) _____	(10)
(a) Pulse rate: Normal <input type="checkbox"/> Abnormal <input type="checkbox"/>	(e) Cyanosis <input type="checkbox"/> Clubbing <input type="checkbox"/> Edema <input type="checkbox"/>	(11)
After 55 minutes rest _____	(f) Height (in without shoes) _____	(12)
(b) Blood pressure: Normal <input type="checkbox"/> Abnormal <input type="checkbox"/>	(g) Weight (in without coat or shirt) _____	(13)
After 5 minutes rest _____		(14)
(c) Heart size: Normal <input type="checkbox"/> Enlarged <input type="checkbox"/>		(15)
(d) Heart rhythm: Normal <input type="checkbox"/> Abnormal <input type="checkbox"/>		(16)
Abnormal: Extrasystoles <input type="checkbox"/> Heart block <input type="checkbox"/> Auricular fibrillation <input type="checkbox"/> Other (specify) _____		(17)
13. X-ray (anter. film) _____		(18)
Fluorography (optional) _____		(19)
14. Electrocardiogram _____		(20)
15. Other observations (only if indicated):		(21)
(a) Blood _____		(22)
(b) Urine _____		(23)
(c) Excretion tests _____		(24)
16. Final diagnosis _____		(25)
17. Recommendations _____		(26)
18. Date _____	19. By: _____	(27)
III. LOCAL BOARD ACTION		(28)
20. Registrant (was—was not) forwarded to the induction station. This special examination. If forwarded, was (accepted—rejected). (Strike a 1 word not applicable.)		(29)
21. Signature of member or clerk of local board _____		(30)

(See Instructions on Reverse Side)

Fig. 1—Record form used in examinations The instructions on the reverse side were as follows

1. An original and three copies of this form will be prepared for each registrant called up for special examination by cardiologists
2. If the registrant is forwarded to the induction station, the original of this form will accompany Form 221. If the registrant is not sent to the induction station, the original of this form will be retained in the registrant's Cover Sheet (Form 53), or if the registrant is rejected at the induction station this original will be returned to the local board and placed in the registrant's Cover Sheet (Form 53)
3. The first and second carbon copies will be forwarded to the Director of Selective Service, Washington, D. C., for all registrants examined, through the State Director of Selective Service
4. The third carbon copy will be retained in the local board for all registrants examined

nation, and because many are unfamiliar with this document its passages pertinent to the heart and blood vessels are listed here As in the case of the majority of the local boards and induction stations there was some, but not great, latitude in the interpretation of murmurs, heart rate, blood pressure, electrocardiograms and x-ray films

<sup>4</sup> To supplement the metropolitan area of San Francisco, some men were drawn from Oakland and Berkeley

# Mobilization Regulations No 1-9

War Department,  
Washington, October 15, 1942

## STANDARDS OF PHYSICAL EXAMINATION DURING MOBILIZATION

### Section XIV

#### Heart, Blood Vessels and Circulation

62 General service—*a* A heart will be considered normal when the apex impulse is within the left midclavicular line and not below the fifth interspace, when sounds are normal and there are no thrills or important murmurs, when there is no abnormal pulsation or dullness above the base of the heart, when pulse rate is normal and regular and there is no unusual thickening of the arteries or significant elevation of blood pressure.

*b* A pulse rate of 100 or over which is not persistent and not due to paroxysmal tachycardia (A pulse rate of 100 or over may be temporary and due to excitement or to recent infection, such as pneumonia or local infections about the nose, mouth and throat or may be induced by drugs)

*c* A pulse rate of 50 or under which is proved to be the natural pulse rate of the individual or to be temporary or due to the use of drugs (If the bradycardia is physiological, the rate on exercise will rise to a higher level and then gradually return to the original slow rate, whereas when heart block is present the rate on exercise will either change slightly or not at all or sudden interruptions in the length of the heart cycle will be detected)

*d* Sinus arrhythmia (This consists in a quickening of the pulse rate during inspiration and a slowing during expiration and is best recognized with the individual recumbent and breathing deeply)

*e* Elevation of blood pressure from excitement, proved to be temporary

*f* Neurocirculatory asthenia, if very mild in degree

63 Limited service—There are no cardiovascular criteria to warrant initial selection for limited service

64 Nonacceptable—*a* Circulatory failure evidenced by definite symptoms such as undue breathlessness, pain or evidence of congestive failure (engorged neck veins, enlarged liver, edema, as well as dyspnea)

*b* Hypertrophy and/or dilatation of the heart evidenced by displacement of the apex impulse to the left of the midclavicular line or below the sixth rib, and of a heaving or diffuse character, or by x-ray evidence

*c* A persistent heart rate of 100 or over when this is proved to be persistent in the recumbent posture and on observation and reexamination over a sufficient period of time See also section XXI

*d* Paroxysmal tachycardia See also section XXI

*e* Heart block

*f* Any serious disturbance of rhythm such as auricular fibrillation

*g* Valvular disease

*h* Congenital heart disease

*i* Persistent blood pressure at rest above 150 mm systolic or above 90 diastolic, unless in the opinion of the medical examiner the increased blood pressure is due to psychic reaction and not secondary to renal or other systemic disease

*j* Thrombophlebitis of one or more extremities if there is a persistence of the thrombus or any evidence of circulatory obstruction in the involved vein or veins

*k* Other abnormalities of the peripheral vascular system, including large varicose veins, Raynaud's disease, Buerger's disease (thromboangitis obliterans), erythromelalgia and arteriosclerosis In doubtful cases special tests should be employed

*l* Aneurysm of any vessel

*m* Pericarditis

*n* Acute endocarditis

*o* True angina pectoris

*p* Coronary thrombosis

*q* Neurocirculatory asthenia (effort syndrome), unless very mild Usual symptoms of this condition are exhaustion, breathlessness, heartache and palpitation These symptoms may tol-

low exertion such as would not produce them in healthy individuals. These and other symptoms, such as dizziness or fainting may arise without evidence of organic disease sufficient to account for the disability of the individual. Cases of effort syndrome may be divided into four groups. (In some cases more than one of these factors is present.)

- (1) As an accompaniment of organic heart disease
- (2) Following infections
- (3) In individuals with poor physique or insufficient training for the work required.

(4) Orthostatic hypotension or tachycardia.—The blood pressure and pulse rate will be taken with the individual in the recumbent position and after standing three minutes. An increase in a normal recumbent pulse rate to 120 beats per minute or more when the individual stands or a decrease of a normal blood pressure (when the individual is recumbent) to values less than 90 systolic and 60 diastolic when the individual stands may be considered evidence of a definite physiologic disturbance and in itself cause for rejection unless the condition is very temporary following an illness, operation, or exhausted state.

65 Electrocardiogram.—The electrocardiogram is of great assistance in determining the nature of certain cardiac abnormalities, the most important of which are the various arrhythmias, defects in conduction and diseases of the coronary arteries. The electrocardiograph may be utilized in cases where such diagnostic aid is especially indicated but will not be employed as a routine measure.

66 X-ray.—In doubtful cases, fluoroscopy and teleroentgenography is advised to determine the size and shape of heart and great vessels. Films taken for the study of the lungs will also be viewed for cardiovascular defects.

In MR 1-9 it is advised that any important murmurs are cause for rejection, but no attempt is made therein to define what are important and what unimportant murmurs, the reader is simply referred to the current literature, such as the American and New York Heart Association's publication entitled "Nomenclature and Criteria for Diagnosis of Diseases of the Heart." However, a fair degree of unanimity was exercised in the five cities, although borderline cases were an occasional cause of concern, whether in time all murmurs can be perfectly evaluated remains a problem for the future. In general, it was agreed that very slight or even slight systolic murmurs at the cardiac apex in the absence of cardiac enlargement or of a clear rheumatic history, especially if they were late in time or dissipated or almost cleared by changes in body position or by forced respiration, should be regarded as unimportant and not disqualifying for military service. Very slight systolic murmurs at the aortic valve area and at the left of the lower sternum were also acceptable in the absence of any evidence of heart disease. Pulmonary systolic murmurs, which are present in many normal persons in the recumbent position, were rarely a cause for rejection per se, only if they were loud and but little affected by respiration were they regarded as evidence of an organic lesion. All diastolic murmurs were cause for rejection, but in occasional cases superficial scratchy to and fro sounds, not indicative of cardiac or pericardial disease, were recognized as entirely unimportant.

5 In Boston it was found convenient to use Levine's classification of loudness of murmur: 1, very slight; 2, slight; 3, moderate; 4, loud; 5, very loud (and 6, with murmur audible without applying stethoscope to the chest wall). (Freeman, A. R. and Levine, S. A. The Clinical Significance of the Systolic Murmur. A Study of 1,000 Consecutive Noncardiac Cases. *Ann. Int. Med.* 6: 1371 [May] 1933. Levine, S. A. The Systolic Murmur. *J. A. M. A.* 101: 436 [Aug 5] 1933.) A satisfactory agreement was quite quickly reached by the examiners in Boston as to the grade of intensity of a murmur after a little practice, a loudness of grade 1 and up to and including grade 2 minus was acceptable in the case of the apical systolic murmur.

The heart rate acceptable for the Army is listed in MR 1-9 as below 100 and above 50, but as a rule rates of 100, and rarely of 110, were passed in this reexamination as normal if manifestly of nervous origin. Also, in the absence of evidence of heart block, rates in the forties were also considered normal.

The blood pressure levels of 150 systolic and 90 diastolic were accepted as the maximal readings for 1A classification except in rare cases when a slightly higher systolic reading (160) was attributed to nervousness.

Electrocardiograms were considered normal when there was no prolongation of PR interval or QRS waves beyond the generally recognized upper limits of 0.2 and 0.1 second respectively, when there was no high degree of right or left axis deviation when there was no flattening or inversion of the T waves in lead 1 or lead 4F and when there was no arrhythmia other than the occurrence of occasional premature beats. Lesser degrees of axis deviation (up to about  $-10$  degrees left and  $+100$  degrees right) prominent S waves in any or all leads, somewhat elevated ST segments (up to 1 mm in the limb leads or 2 mm in lead 4F) and slightly inverted T waves in lead 2 corrected by recumbency were acceptable if nothing otherwise was found wrong with the heart.

X-ray (teleroentgenographic) heart shadows were accepted as normal if their transverse diameters did not exceed by more than 1 cm the expected measurements according to the individual's height, weight and age as calculated by the Hodges-Eyster tables (quickly determined by nomogram or slide rule).<sup>6</sup> This measurement was considered just as suitable as that of the area and much more easily made. However, the fact that these standards are by no means infallible and that they do not fit all body builds was duly recognized and allowances were made accordingly, as will be noted later. The shape of the heart shadow and the contour of the great vessels were also carefully scrutinized.

5 *Borderline Cases* (table 4).—At this point it is appropriate to discuss the disposition of the many borderline cases that were encountered in each city. In the great majority of cases the criteria as outlined in Mobilization Regulations 1-9 were followed to the letter to avoid misunderstandings, even though a certain amount of leeway is allowed by those regulations according to the discretion of the examiners. But a few cases were accepted with doubtful findings. In Chicago 2 men with an increase in heart size were labeled 1A, in New York there were 8 men with systolic blood pressures slightly above 150 mm but with diastolic pressures not over 90 mm and 6 men with heart rates between 100 and 120 who were considered perfectly normal and so graded 1A, in Philadelphia 36 men were passed as normal after careful study of the x-ray films by a roentgenologist, although the transverse diameters of their heart shadows were slightly above the Hodges-Eyster upper limit, as agreed on, and in San Francisco 31 cases of hypertension ("nervous") and 19 cases of tachycardia ("nervous") were accepted as 1A. In Boston all borderline cases were lumped together for convenience of follow-up and, although considered as probably normal, and at first labeled "1A liberal," were finally rejected for immediate service because of possible confusion, since they did not fit strictly the criteria as at present listed under

6 Hodges, F. J. and Eyster, J. A. E. Estimation of Transverse Cardiac Diameter in Man. *Arch. Int. Med.* 37: 707 (May) 1926.



the reinforcing of this traumatic experience by earlier psychosexual traumas. Of these, masturbatory guilt is prominent. The usual alternatives taken by the psychopathologic condition are those offered by a reactive depression with neurasthenic features and an anxiety neurosis with compulsive-obsessive phenomena.

The promorbid personality type is basically responsible for the neurotic pattern characteristic of later stages. It is interesting to note in this regard that the persistence of symptoms, both psychic and somatic, is not necessarily related to demonstrable pathologic changes. Total and partial impotence may persist for many months after a complete symptomatic remission. Loss of libido, with or without loss of potentia, often occurs as an isolated symptom.

The group grossly classified as reactive depression types are milder versions of the usual reactive depression. There is the typical personality contraction with guilt, depression, retardation and—almost constantly appearing features suggestive of neurasthenia—fatigability, organ preoccupation, hypersensitivity, work incapacity and worry.

On the other hand, another large group is composed of those patients who show predominating anxiety symptoms with related compulsive features. They, as a group, have not been as successful in completely channelizing their anxiety. Early sexual conflicts are intimately blended with their present complaints. Anxiety is sometimes precluded by resorting to compulsive sexual experimentation which is rarely gratifying. There seems to be a more concentrated psychosexual localization of symptoms in this group than in the former. As a rule, they lack the diffusion of anxiety quality which manifests itself as weakness, backache, leg pains and anorexia.

In both categories the initial complex is often obscured by an accretion of secondary symptoms. These are often misleading, since the referents are purposefully vague. Irritability, at times frank belligerence, universal dissatisfaction and what is best described as "gold bricking" constitute the presenting symptom picture. The "face saving" protection offered by these complaints is a transparent mechanism.

Psychotherapy, after the development of frank psychologic symptoms, is difficult. There is then an almost unshakable reluctance to accept the formulation that impotence and lack of libido are psychogenic in their origin, particularly is this so when the patient's beliefs have been supported by his own uncritical observations and sometimes the instructions of uninformed physicians. The uncertain prognosis is an additional factor, it being fairly common knowledge that, to date, there is no satisfactory treatment. Credence in the usually held theory that removal to a cool climate accomplishes effective therapy often is shaken by personal familiarity with recrudescence of symptoms after return to the United States. There is a tendency for patients to overemphasize the significance of these relapses. The type of communal living to which military personnel are subjected is conducive to the sharing of confidences with companions similarly afflicted, and the adverse effects of suggestion increase the individual's susceptibility to symptoms.

The quality of "contagion" plays a large role in the dissemination of symptoms which lead to incapacity. Injudicious questions by well intentioned physicians frequently induce the phenomenon to which Hurst has

given the name "iatrogenic hysteria." Fear of ridicule and embarrassment dooms each successive attempt to failure and sets the stage for a firmly established neurosis.

In a large percentage of cases their antecedent instability requires no great threat to precipitate the symptom complex described. In retrospective analysis sexual performance appears to have assumed disproportionate significance in a sufficient number of these patients to warrant it being assumed to be the latent source of the future psychopathologic condition. This overevaluation appears more or less constantly in the majority of cases and therefore must be considered to have positive etiologic value.

In general, if psychotherapy is conducted on a group basis, coupled with the usual individual interviews, there is a greater likelihood of relieving symptoms in a higher percentage. Because of the tendency for present traumatic experiences to merge with earlier conflicts, it is advantageous to avoid as far as it is possible a too penetrating analysis of background factors. Thus, for the most part, unnecessarily protracts therapy and is notoriously unproductive of satisfactory results.

#### COMMENT

The value of prophylactic psychiatry in raising the threshold of vulnerability to psychologic disorders cannot be overestimated. The psychologic stability of soldiers is directly proportional to their factual knowledge of the situations in which they will serve. For the average individual the ravages of disease and war are exaggerated. Information of this sort is rarely limited to specific individuals. Since the hazard is a common one, it has the property of diffusion and the awareness of it rapidly becomes universal. It has been amply demonstrated that psychologic inoculation is the only effective preventive. Latent and imaginary dangers are naturally shocking on initial recognition, and attendant anxiety can be dispelled only when men are given an understanding of the irrationality and emptiness of most of their fears. A patient, simple, repeated presentation of facts will in most instances assuage doubts and "debunk" groundless anticipations.

The medical officer is in an ideal position to render this valuable service. He is known to the men, he has had the opportunity to demonstrate his technical competence and he is serving with them, sharing their hardships and experiences. In addition to group talks, individual discussions of particular problems with men who have contracted the disease will in a large degree obviate their "flight into nonorganic symptoms."

Group discussions on the role of the mosquito in the transmission of the disease establish a reasonable explanation for the directives on screening and mosquito control. Rules and regulations are appreciated as personally valuable, prophylactic directions, not as arbitrary commands. Simple, nontechnical explanations of the pathology, supplemented by illustrative charts and blackboard diagrams, can do much to allay fears of impotence, sterility or possible genital transmission. Sex hygiene talks on the causes of impotence will obviate the many false conclusions so often drawn. Furnished with authoritative information, the soldier is less likely to assume that the familiar picture of the chronically infested native with elephantiasis is a mirror prediction.

## PULMONARY EDEMA

J M CARLISLE, M D

RAHWAY, N J

The vast increase in our industrial production since the outbreak of war has of necessity exposed a greatly increased number of workers, many of them inexperienced in the handling of industrial equipment, to hazards from toxic fumes. This unfortunate effect has been particularly reflected in the rise in incidence of pulmonary edema following exposure to toxic gases. Indeed, so frequently has pulmonary edema been noted as a terminal event in these cases that it seems desirable to call attention to a simple method which has proved effective in the prevention as well as the treatment of these cases.

Briefly, the method consists in absolute bed rest and the immediate administration of oxygen under atmospheric pressure with a provision for expiration against calibrated resistance of from 1 to 6 cm of water pressure.

We begin at once the administration of 100 per cent oxygen under atmospheric pressure, setting the expiratory valve or the efferent tube leading into the water bottle so as to afford 1 cm of water pressure. This pressure is gradually, though fairly rapidly (five to ten minutes), raised to not more than 6 cm of water pressure. Oxygen administration under these conditions is continued for from one to three hours depending on the appearance and state of the patient. Trial periods are made of breathing without the mask for five to fifteen minutes, and if any increase in respiratory rate, difficulty in breathing, cyanosis or coughing is observed the mask is reapplied and oxygen continued under the same conditions for a further period. With prompt and effective administration of oxygen in this way we have not had a single fatality from pulmonary edema in the past nine years.

In some instances considerable time may elapse between the patient's exposure and his delivery to the medical department. In most of these cases in which actual pulmonary edema is present we follow the recommendations Dr D W Richards Jr<sup>1</sup> made some time ago for the administration of 1 to 100 solution of epinephrine by the oral nebulizer method either prior to or during the administration of oxygen. This has proved to be a valuable adjunct in these advanced cases as well as in cases in which the irritant itself has produced bronchiolar spasm obstructing the intake of oxygen. (In these cases oxygen may be administered under 2 or 3 cm of water pressure during inspiration, with the usual positive pressure used during expiration.)

The administration of the 1 to 100 epinephrine solution may be repeated at intervals or may be done continuously by applying the nebulizer to a side arm of the oxygen intake tube.

Without significant bronchiolar obstruction and before advanced pulmonary edema has appeared, inspiration of oxygen under atmospheric pressure with expiration against a calibrated resistance of 6 cm of water pressure has handled successfully all cases we have encountered.

While in general our approach as well as the actual management of most of our cases, has been that of

prevention, we are convinced from our own experience that the use of the 1 to 100 epinephrine solution combined with the administration of oxygen under positive pressure of 1 to 6 cm of water may be recommended for active treatment of the advanced stages of pulmonary edema caused by certain noxious gases. In our experience this has been a far more effective method of handling frank pulmonary edema than any of the procedures hitherto suggested. We find that on check of our records for the past year and a half, we have had 316 cases in which only this method of treatment has been employed. Case reports, as well as an analysis of our data for the ten year period during which this method of treatment has been employed, will be published later. If one assumes that no more than 50 per cent of these were of a severity likely to result in advanced pulmonary edema, our experience in completely preventing the latter seems appreciable.

Through educational means directed in behalf of the prevention of pulmonary edema we have secured the cooperation of all employees in coming to the Medical Department immediately after undergoing exposure to one of these noxious agents which are, in the main, oxides of nitrogen, phosphorus oxychloride, phosphorus pentachloride, phosphorus trichloride, methyl bromide, chlorine, cadmium, and dust from certain alkaloids. Thus we see the cases in all but very few instances at the beginning of the so-called "quiescent" or "latent" period.

We do not use and, as a matter of fact, advise against the use of oxygen-carbon dioxide mixtures.

In some few cases we have found the oxygen-helium mixture of significant benefit.

While tanks of 100 per cent oxygen are routine, we use a special mixing valve which will allow for admixture of air in the tube leading to the face mask. However, air should not be added in excess of 25 per cent since the patient will cough in the face mask if at least a 75 per cent oxygen concentration is not maintained.

One or two swallows of milk seem to be the most nearly satisfactory means of controlling the chronic hacking cough which so frequently occurs after the oxygen pressure treatment of cases exposed to irritant gases, particularly phosphorus oxychloride.

We have learned from experience that it is a great mistake to allow for a delay in beginning this treatment, which should be started as early as possible after exposure. If one waits for anoxic anoxia and until the patient is actually drowning in his own fluids, or the chest, by x-ray, shows a veritable "snow storm," then treatment has been unwisely delayed. However, even at this stage, oxygen and positive pressure are life-saving, and morphine, venesection, mercurial diuretics, or other such ill-advised or heroic measures are in my opinion, contraindicated and should be used only as control measures in experimental studies.

While the oxides of nitrogen are by no means the most toxic of irritant gases, they represent in many industries the most common cause of pulmonary edema. Unfortunately, this ominous reaction is frequently most insidious in its onset. For this reason every physician in industries in which this hazard exists should be on the alert for its early detection and take advantage of every means at his disposal to see that proper treatment is instituted as early as possible after exposure.

All cases which have been exposed to such irritant gases should be subjected to oxygen therapy with the apparatus so arranged that exhalation is carried out

<sup>1</sup> Richards, Dickinson W Jr, Barach, Alvan L and Cromwell Henry A. Use of Vaporized Bronchodilator Solutions in Asthma and Emphysema. A Continuous Inhalation Method for Severe Asthmatic States. *Am. J. M. Sc.* 199: 225 (Feb.) 1940.

against a calibrated resistance. This form of therapy conducted in the incipient stages of pulmonary edema will frequently prevent its advancement and will be effective in saving many more lives than will more heroic measures instituted when the condition has reached its more advanced stages.

## EFFECT OF CERTAIN SULFONAMIDES ON THE ELECTRICAL ACTIVITY OF THE CEREBRAL CORTEX

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AND

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WITH THE TECHNICAL ASSISTANCE OF  
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The local application of sulfonamides to cranial injuries has become a widespread practice, particularly in military surgery. Recently reports by Watt and Alexander<sup>1</sup> in England and Pilcher and his co-workers<sup>2</sup> in this country have indicated that sulfathiazole in particular should not be allowed to come in contact with the cerebral cortex because of the danger of generalized convulsions. Sulfadiazine and sulfapyridine did not appear to possess this disadvantage. Because of the considerable practical importance of the problem at present, we have undertaken a series of experiments designed to determine the effect of local applications of various sulfonamides on the electrical activity of the cortex.

### METHOD

The experiments were all acute ones and were done on cats under light or moderate anesthesia induced with pentobarbital sodium. The electrical activity of the exposed cortex was recorded by a Grass ink-writing electroencephalograph such as is used for clinical electroencephalography. Unipolar electrodes were used. The stigmatic electrodes consisted of cotton wicks moistened with isotonic solution of sodium chloride and wound about chloridized silver wires with the free ends lightly touching the cortex. The cat's ears were grounded and served as the indifferent electrodes.

The drugs tested were sulfanilamide, sulfathiazole, sulfadiazine and sulfapyridine. Two preparations of each drug were used, the acid, a relatively insoluble sulfonamide compound, and the sodium salt of the compound. The relevant physical and chemical properties of the eight preparations are given in the accompanying table.

Experiments were done on 23 cats. Sodium sulfanilamide was tested eight times, sodium sulfathiazole sixteen times, sodium sulfadiazine twelve times and sodium sulfapyridine eleven times.<sup>3</sup> Sulfanilamide was tested five times, sulfathiazole eight times, sulfadiazine seven times and sulfapyridine twice.

Experiments were conducted with both soluble and insoluble preparations. The soluble preparations were applied to the cortex by moistening a small cotton pledget in a solution of the drug of the appropriate strength made with an isotonic solution of sodium chloride and placing it on the cortex for ten minutes. At the end of that time the pledget was removed, the cortex was washed with warm saline solution, the cotton wick electrode was reapplied and recording was resumed. The

insoluble preparations were simply dusted on an area of the cortex, and the wick electrode was then brought into contact with it. The powder was left on for a longer or a shorter time (thirty to one hundred and twenty minutes).

The soluble preparations form rather alkaline solutions, as shown in the table, and it was necessary to control for this factor. Solutions of sodium hydroxide of  $pH$  10.3 were applied to the cortex for ten minute periods without any change in the electrical activity.

### RESULTS

We found that solutions of the sodium salts of sulfapyridine and sulfathiazole of 1.25 to 2.5 per cent or more when applied locally for ten minutes produced striking electrical changes. Solutions of sodium sulfadiazine produced similar changes when applied in slightly higher concentration—about 5 per cent or more. The electrical responses consisted in high voltage negative or diphasic spikes, appearing at irregular intervals. The spikes were similar to those seen after local application of strychnine to the cortex and are illustrated in figure 1. Solutions of sodium sulfanilamide varying in concentration from 2.5 to 20.0 per cent were applied to the cortex in the same way without producing any significant change in the electrical activity.

There were two characteristics of the response to solutions of sodium sulfathiazole which seem worth noting: the latent interval between the removal of the pledget and the first appearance of the characteristic spikes, and the relatively long duration of the response. In only two of nine trials was the characteristic response to sodium sulfathiazole present at the time the drug was removed from the cortex. In the other seven trials the response did not appear till five to fifteen minutes later. The average latent period for the nine trials was eight minutes. With sodium sulfapyridine and sodium sulfadiazine, on the other hand, the electrical response either was present immediately on the removal of the drug or else did not appear at all. The average duration of the response (either from the time of the removal of the drug from the cortex or from the time of the first appearance of the response) was thirty-four minutes for sodium sulfathiazole (range fourteen to fifty-one minutes), eleven minutes for sodium sulfapyridine (range four to fourteen minutes) and only seven minutes for sodium sulfadiazine (range three to fifteen minutes).

The following results were obtained by the application of the acid, relatively insoluble forms of the four drugs to the cortex. The application of sulfathiazole powder produced the same electrical response as did the soluble salt. In an experiment in which the powder was applied to the anterior sigmoid gyrus (motor area) the opposite foreleg twitched synchronously with each spike in the electrical record for twenty minutes, i.e., the cat had a mild focal seizure despite its anesthesia (fig. 2). The application of sulfapyridine powder was followed by the appearance of high voltage, four to seven second waves in the electrical record (fig. 2). We found no change in electrical activity following the application of either sulfadiazine or sulfanilamide.

### COMMENT

Direct application of sulfathiazole or of a solution of the sodium salts of sulfathiazole, of sulfapyridine or of sulfadiazine to the cat's cortex gives rise to spontaneous electrical activity in the cortex which appears as high voltage spike discharges in the electroencephalographic record (figs. 1 and 2). These spike discharges are evidence of an irritant action of these drugs on

This work was aided by a grant from the John and Mary R. Markle Foundation.

From the Department of Neurology, Harvard Medical School, and the Neurological Unit, Boston City Hospital.

<sup>1</sup> Watt, A. C., and Alexander, G. L. Epilepsy Following Application of Sulfathiazole Near Brain, *Lancet* 1: 493-495 (April 25) 1942.

<sup>2</sup> Pilcher, Cobb, Angelucci, Ralph, and Meacham, W. F. Convulsions Produced by Intracranial Implantation of Sulfathiazole. Preliminary Report J. A. M. A. 119: 927 (July 18) 1942.

<sup>3</sup> Sodium sulfanilamide, the only one of these compounds which is not commercially available, was furnished by Dr. K. K. Chen of Eli Lilly and Company. Dr. Chen also furnished the figures on the  $pH$  of this compound.

CLAWING OF THE GREAT TOE  
FOLLOWING IMPROPER APPLI-  
CATION OF PLASTER

LIEUTENANT ARTHUR M. PRUCE

AND

MAJOR WALTER H. HAGEN

MEDICAL CORPS, ARMY OF THE UNITED STATES

Hundreds of patients have been referred to the Physical Therapy Department by the orthopedists of Stark General Hospital during the past eighteen months. They were sent, for the most part, for rehabilitation of muscles and joints of the lower extremities following severe injuries and infections that were, of necessity, immobilized over long periods of time. In the restoration of function and mobility to these injured extremities, 8 cases of clawing of the great toe, not present at the time of injury, were observed by one of us (A. M. P.). In this group of 8 cases the deformity appeared in the presence of chronic infection prolonged healing following surgery of the foot, and with osteomyelitis resulting from gunshot wounds or compound fractures, where prolonged immobilization is imperative.

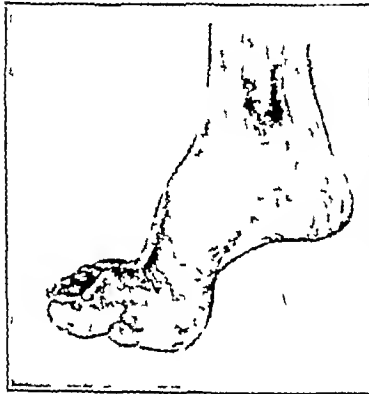


Fig. 1—Clawing of the great toe, medial aspect.

The only author to have recognized a similar entity is James Mennell in Sir Robert Jones's book "Orthopedic Surgery of Injuries,"<sup>1</sup> who mentions a hallux rigidus deformity of the great toe in connection with gunshot wounds of the lower extremity.

Mercer,<sup>2</sup> quoting Todd, describes clawing of the toes as "a dropping of the metatarsal heads below the normal level, alteration of their line of action which leads to pulling up of the proximal interphalangeal joint of the toes, with a secondary important effect of shortening the course of weakened extensor muscles so that they then adaptively contract (and may, in this way, mask their original weakness)." This condition is seen in children following poliomyelitis, infections of the sole of the foot, peroneal muscle atrophy, as part of the little understood picture of Friedreich's ataxia, and in other similar nervous system degenerations or failures of development.

The accepted technic for the immobilization of the leg and foot in a plaster cast made with a "reverse or reinforcement," applied to the posterior aspect of the leg, is to carry the edge of the cast beyond the toes on the sole of the foot (in order to protect them from the weight of the bedclothes) and to the base of the toes on the dorsum of the foot. The longitudinal arch is

routinely molded, and the metatarsophalangeal joint of the great toe is usually immobilized in extension. In the application of this standard type of cast, force is exerted to maintain the foot at right angles to the leg, i. e. in a neutral position. By incorrectly placing traction on the projecting end of the "reverse" to dorsiflex

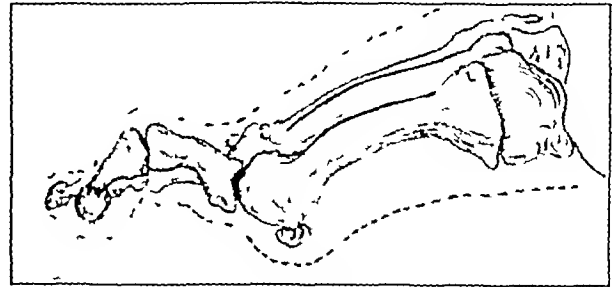


Fig. 2—Schematic view.

the foot, the projecting plantar toe piece is rounded off in such a manner as to produce further extension of the metatarsophalangeal joint and a depression of the metatarsal head. A bed in the soft plaster is often unintentionally molded, in which the great toe is held with the interphalangeal joint in flexion, and, since the extremity is kept immobile while the cast dries, a well defined ridge under the interphalangeal joint is formed—thus the clawing of the great toe. The fixed extension of the metatarsophalangeal joint in itself may cause the clawing, since the interphalangeal joint then tends to flex in order to maintain equilibrium and muscle balance.

Of the 8 cases observed, 1 was treated here from the beginning, the deformity developing under our own eyes. The remaining 7 patients were transferred from other hospitals, and this deformity was observed only after the removal of the plaster. When the deformity is recognized, it is relatively fixed and extremely resistant to treatment. The most intensive and prolonged physical therapy proved of little value, the osteomyelitis subsided, the fracture healed, but the clawing of the great toe persisted, resulting in metatarsalgia and a poor walking gait. It prevented running and remained a site of local irritation, provoking corns and callus formation.



Fig. 3—Hyperextension of the metatarsophalangeal joint of the great toe and flexion in the interphalangeal joint.

From a military standpoint this is a very grave matter, for it prevents the soldier from returning to full field duty. Correction has been a difficult problem. To date, surgical intervention has not been resorted to, primarily because most of the patients under observa-

Read in abstract before the Congress of Physical Therapy, Eastern Section, New York April 10 1943.

From the Physical Therapy Section (Lieutenant Pruce) and the Orthopedic Section (Major Hagen), Stark General Hospital.

The photographs are by Capt. Alfred J. Surace, M. C. Surgical Service, S. G. H. the drawings by Private Eugene M. Nassau, S. G. H.

1 Jones, Sir Robert, Orthopedic Surgery of Injuries vol. 2 Oxford Medical Publications 1921.

2 Todd in Mercer, Walter, Textbook of Orthopedic Surgery, ed. 2 Baltimore: William Wood & Co., 1938, p. 747.

tion were again transferred to other hospitals. Several men have recovered enough to make surgery unnecessary.

Prevention of this condition is the most important aspect of this report. More care must be exercised in the application of foot plaster splints. If a "reverse"

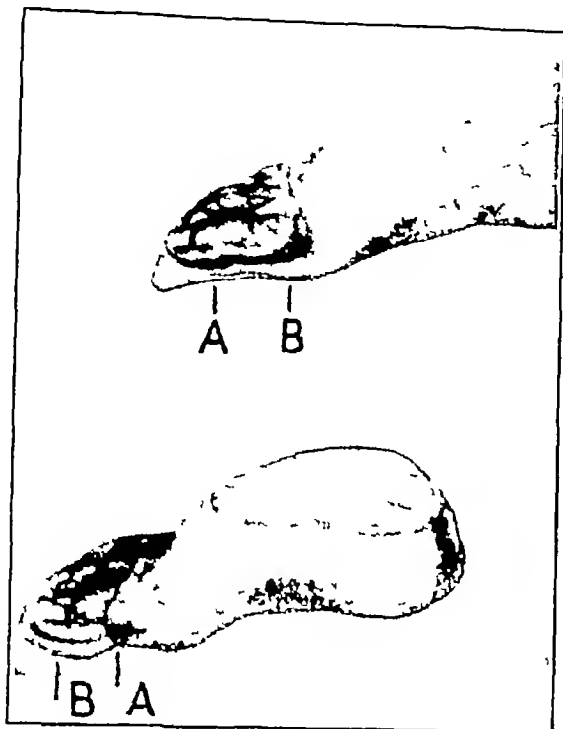


Fig. 4—Above, cast properly applied. A, toe piece in straight line; B, metatarsophalangeal joint of great toe free. Below, cast improperly applied. A, bed of plaster under great toe; B, ridge under interphalangeal joint.

or "reinforcement" is used, the sole of the foot should be held so that the plantar toe part of the cast is carried in a straight plane to the tips of the toes and not used as a means of obtaining dorsiflexion of the foot. After several rolls of plaster are applied, both metatarsal and longitudinal arches are preserved by molding the plantar surface of the cast with the heel of the hand. Finally

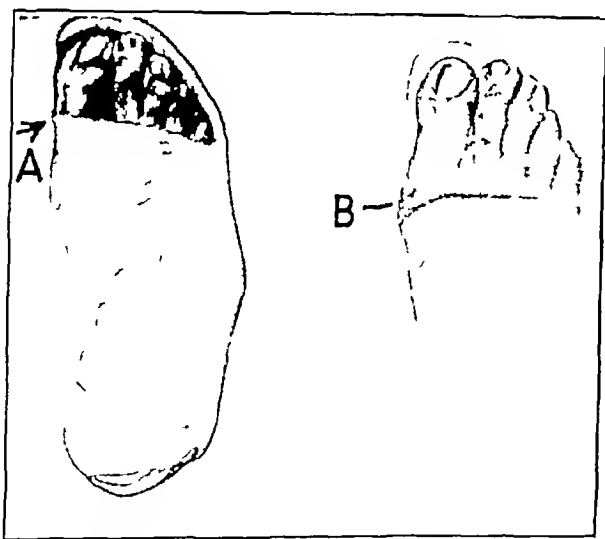


Fig. 5—A, immobilization of metatarsophalangeal joint by dorsal edge of cast; B, joint free.

the dorsal edge of the foot cast is carried to the interdigital folds of the toes, except for the great toe, and here the metatarsophalangeal joint is left free. Early exercise will prevent or combat edema in this area, and, with the first changing of the cast, the distal third of the dorsum of the foot may be left free to permit exercise of the forefoot in all planes of motion.

By simple adjustment of customary methods of the application of plaster in the treatment of lower leg injuries, this distressing disability can be anticipated and thus prevented.

#### SUMMARY AND CONCLUSIONS

- 1 A new and previously not described factor in the causation and prevention of the clawing of the great toe has been observed in a series of 8 cases treated in the Physical Therapy and Orthopedic sections of Stark General Hospital.
- 2 The cause of the clawing is believed to be due to improper applications of plaster foot splints.
- 3 A method of prevention by proper splinting has been devised.
- 4 The development of this deformity can seriously retard full recovery and may prevent the return of otherwise healthy soldiers to full military duty.

### Clinical Notes, Suggestions and New Instruments

#### STAPHYLOCOCCUS AUREUS SEPTICEMIA TREATED WITH PENICILLIN

WITH REPORT OF DRUG SIDE EFFECTS

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The following report describes a case of *Staphylococcus aureus* septicemia successfully treated with penicillin, including the presentation of some side reactions resulting from the use of this material intravenously.

#### REPORT OF CASE

**History**—P. K., a white man aged 36, hoist engineer and former sailor by occupation, was admitted to the First Medical Service of City Hospital, Welfare Island, N. Y., on Dec. 29, 1942 with chief complaints of chest pains, fever and malaise of forty-eight hours' duration. He had apparently enjoyed good health prior to the onset of the present illness and gave no history of recent contact with a sick person, bone injury or superficial wounds. For two days prior to admission he complained of repeated chilly sensations without frank chills, fever, malaise, vague bilateral chest pains, mild cough productive of small amounts of whitish sputum, headache, weakness, anorexia and constipation, for which he treated himself at home with "Bromo-Quinine" and "phenolphthalein."

The patient sailed the seas from 1932 until 1940, and, although he was often in the Mediterranean Sea area and in South America, he never had malaria or any other illnesses so prevalent in these localities. In 1935 and again in 1938 he suffered with pneumonia, while in 1937 he contracted gonorrhea, which was treated with sulfanilamide. For a short time in 1939 the patient had furunculosis of the neck, arms and forearms which subsided spontaneously without specific treatment.

**Physical Examination**—On entry the patient appeared asthenic, pale, fairly well nourished and not acutely ill. The pupils were round, regular, and equal in size and reacted well to light and in accommodation. The nasal septum was intact and deflected to the left with the presence of moderate mucopurulent nasal discharge. Oral hygiene was good and the pharynx was moderately injected with some postnasal drip. Vesicular and crusted herpetic lesions were present on the upper and lower lips. The neck was supple and no nodes were palpable. The heart was apparently not enlarged, rhythm was

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regular and tones were of good quality with no audible murmurs. The blood pressure was 116 systolic, 70 diastolic. Chest expansion was symmetrical and the lungs were normal. The abdomen was soft with no palpable viscera and no apparent costovertebral angle tenderness to fist percussion. Reflexes were present and active and there was no sign of articular pathologic change. Over the torso and extremities were numerous variable sized nonhemorrhagic erythematous macular lesions which were flat and nonpruritic and did not fade on pressure. The temperature was 102 F, pulse rate 114 and respiratory rate 28.

**Clinical Course**—The patient was put to bed and treated with supportive measures for the first fourteen hospital days. The admission urinalysis was negative, as were numerous repeat examinations. The red blood cell count was 4,200,000 with 85 per cent hemoglobin (Sahli) and the white blood cell count was 9,600 with 74 per cent polymorphonuclears, 3 per cent band forms, 1 per cent eosinophils and 22 per cent lymphocytes. The blood Wassermann test was negative, nonprotein nitrogen 30, blood sugar 84 and icterus index 4.

The initial throat culture showed proteus-like organisms, the urine culture a mixed *Staphylococcus albus* and *streptococcus* infection, while the blood culture, initially reported as negative, showed a delayed growth of *Staphylococcus aureus*. The sputum was negative for tubercle bacilli and pneumococci, the sedimentation rate was slightly accelerated. A chest roentgenogram showed no evidence of pulmonary consolidation.

On the first hospital day, after a short period of well-being with drop in fever, the patient suddenly complained of chilly sensations followed by mild shaking rigors with rise in temperature to 103.8 F, pulse rate to 100 and respiratory rate to 24. He complained of vague pains in his left chest, mild articular pains in the lower extremities and the only new physical finding of note was the appearance of a new crop of erythematous macular lesions, similar to those on entry. The patient did not look particularly ill. The febrile reaction subsided in about twelve hours and the accompanying signs and symptoms rapidly cleared up. A blood culture taken at this time was positive for *Staphylococcus aureus*.

Similar febrile episodes preceded by frank chills and accompanied by similar skin eruptions plus some papular lesions occurred on the fifth, ninth and eleventh hospital days, while febrile reactions, not preceded by rigors occurred on the thirteenth, fifteenth and seventeenth hospital days. The temperature curve was septic in type with spikes up to 103-105 F, usually lasting eight to twelve hours. Repeated white blood cell counts ranged from 14,700 to 22,080 cells with 71 to 81 per cent polymorphonuclears. Sedimentation rates were slightly accelerated. A blood culture taken in the ninth hospital day showed a delayed growth of type II meningococci, confirmed by the Department of Health Laboratory, but a meningococcus agglutination test by the Department of Health Laboratory was negative.

Multiple blood cultures were taken during the period of the febrile episodes. One drawn on the morning of the eleventh hospital day showed no growth, while another one taken later the same day at the time of a chill showed a few diphtheroid organisms. However, the blood culture on the fifteenth hospital day was reported as positive for *Staphylococcus aureus*.

Agglutination tests for typhoid, paratyphoid, dysentery, brucella and tularemia organisms were negative. Repeated peripheral blood smears during various portions of these malaria-like febrile cycles failed to disclose any of the parasites, and a study of the sternal bone marrow was noncontributory. Feces cultures were negative for dysentery, typhoid and paratyphoid organisms, and the heterophile antibody reaction was negative. A second throat culture showed some staphylococci, and another urine culture again showed *Staphylococcus albus* and streptococcus organisms. Roentgenograms of the mastoids, paranasal sinuses and ribs failed to disclose evidence of focal infection. Cystoscopy and retrograde pyelography revealed a normal genitourinary tract, but culture from the right kidney urine revealed *Staphylococcus albus*. The prostatic smear was negative for gonorrhea but did show some gram positive cocci. An electrocardiogram was normal.

Despite the failure to find malarial parasites in the blood stream and because of the inability to obtain repeated positive blood cultures due to delayed growth of the organisms, coupled with the malarial type of temperature course, it was decided to use quinine as a therapeutic test, but a three day trial produced no effect whatever. On the seventeenth hospital day the patient was started on sulfathiazole in adequate dosage (4 Gm. initially and 15 Gm. every four hours night and day) in view of the positive *Staphylococcus aureus* blood culture of the fifteenth hospital day. During the succeeding four days he continued to have a septic temperature ranging from 98.6 to 103.8 F with chilly sensations, vague aches and pains but no rash. A blood culture taken on the seventeenth hospital day was again positive for *Staphylococcus aureus*, while another one on the twenty-first day showed a delayed growth of staphylococci not differentiated as to type. The intradermal test with staphylococcus antitoxin was strongly positive and this agent was used.

The patient received a series of blood transfusions for supportive effects, despite lack of anemia. On the twenty-first hospital day the temperature came down to normal and stayed so for two additional days. At this period the sulfathiazole dosage was reduced to 1 Gm. every fourth hour. On the evening of the twenty-fourth hospital day the patient had a chill, the temperature rose to 101 F and then continued to rise in step-ladder fashion through the twenty-seventh hospital day to 104.6 F. With this rise in temperature there was a return of his previous symptoms of vague joint, chest and abdominal pains. There was pronounced intoxication, the sedimentation rate became very rapid, the white blood cell count was 16,250 with 63 per cent polymorphonuclears and 10 band forms, and the patient's status became critical, almost moribund. The sulfathiazole blood level was 70 mg. per hundred cubic centimeters. An erythematous, tender, nodular eruption appeared on the face, neck and extremities differing from the previous eruptions in its nodularity and tenderness, but the color of the two types was the same. These findings might have been due to drug intoxication fever and reaction, but at the time we were convinced that it was a recrudescence of the blood stream infection.

The sulfathiazole was discontinued on the morning of the twenty-seventh hospital day and at 1 p. m. the administration of penicillin sodium was started by the intravenous route. There was a rise in temperature at 4 p. m. to 104.6 F followed by a rapid and continuous drop to 99 F by 4 p. m. of the twenty-eighth hospital day. Thereafter the temperature continued to be normal, reaching 100 F only on two or three occasions, and the white blood cell counts and sedimentation rates came back to normal. A blood culture taken on the thirty-second hospital day, five days after the institution of penicillin, showed rare colonies of nonhemolytic *Staphylococcus albus*, while one on the forty-fifth day contained only some diphtheroid organisms.

The patient was discharged on his fifty-seventh hospital day (February 24), but blood cultures drawn on the forty-eighth and fifty-seventh hospital days initially reported as negative, showed delayed growths of *Staphylococcus albus* and staphylococci slightly *aureus*, respectively. Following discharge from the hospital he has remained well and asymptomatic to date (May 16) and has resumed work in a shipyard. A blood culture taken on the sixteenth day after discharge showed less than one very attenuated *Staphylococcus albus* colony per 5 cc. of blood, while another on the thirtieth day showed only one hemolytic staphylococcus colony on the entire plate. Repeated blood cultures since that time have been negative to date and blood counts and sedimentation rates normal. A repeat meningococcus complement fixation test was negative, while the staphylococcus agglutination tests showed complete agglutination through 1:6,400 dilution for both *Staphylococcus aureus* and *albus* (Department of Health Laboratory).

#### COMMENT

**Penicillin Dosage and Reactions**—The patient received daily 60,000 Oxford units of penicillin sodium for three days, 30,000 units for ten days and 20,000 units for three days, all in divided doses intravenously. On the second day of penicillin therapy

each injection was accompanied by a moderately severe frontal type of headache lasting on the average about forty minutes after completion of the injection, and there were no accompanying photophobia, vertigo, tinnitus, blood pressure, fundi or neurologic changes. These reactions persisted over a two day period. During the sixth day of the penicillin routine the patient began to complain of severe cramplike pains in the calf muscles of the legs, starting five to six minutes after the injection was finished, lasting forty-five to sixty minutes and being followed by dull aching pains in these areas for variable periods of time. There were no associated local tenderness or reflex changes, and these reactions lasted only two days. The study of serial blood smears after the starting of penicillin revealed the presence of a definite lymphocytosis with decrease in the number of polymorphonuclear cells, but after the drug was discontinued the differential white blood cell count returned to normal.

Twelve blood cultures were taken during the period of hospital observation.<sup>1</sup> Eight proved positive for staphylococci, four aureus, three albus and one unidentified. The early staphylococcus cultures were aureus, the later ones, taken after the first month, both aureus and albus. The lag periods of growth usually varied from four to six days, although one culture became positive only on the seventeenth day. The later cultures showed a diminishing number of colonies, sometimes only one colony in 2 to 5 cc of blood. The meningococcus type II was isolated from the culture taken on the ninth day. The agglutination tests performed by Miss S. A. Scudder, bacteriologist, with blood serum obtained on the day of discharge revealed a titer of 1:6,400 with *Staphylococcus aureus* isolated on the fifteenth day and *Staphylococcus albus* isolated on the fifty-seventh day, and a titer of 1:800 with *Staphylococcus albus* isolated on the forty-eighth day. The agglutination tests against meningococcus, performed by Mrs. Falk of the New York City Board of Health, were negative. Three blood cultures were taken when the patient returned for a follow-up. The first, thirty days after discharge from the hospital, showed rare *Staphylococcus aureus*, two subsequent cultures taken on the thirty-seventh and fifty-sixth days after discharge remained sterile.

#### CONCLUSION

We recognize the possibility but doubt the probability that the patient would have recovered without the use of penicillin. The improvement in the general condition and well-being of the patient within twelve hours after the institution of penicillin was dramatic and recovery thereafter was uneventful. However, it should be noted that, despite the use of sufficient sulfathiazole and more than the usually advocated amount of penicillin, the blood cultures only slowly became negative.

#### THE USE OF THE STETHOSCOPE IN THE PREVENTION OF "BOILERMAKERS' LARYNGITIS"

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In many industries the existence of noise renders it necessary to shout and strain the voice in order to be heard. This condition gives rise to many cases of laryngitis which can be prevented by the use of a simple communication system.

The stethoscope is an ideal instrument for this purpose. It does not involve intricate electrical appliances and can be carried about free from line wires. The speaker talks through the bell of the stethoscope. This is best accomplished by cupping the hand about the bell and making contact between the mouth and the hand. The receiver listens through the ear pieces. A very clear communication is thus effected with the use of the voice at conversational levels amidst loud noises.

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<sup>1</sup> Summary of bacteriologic studies by Dr. James R. Lisa, pathologist, City Hospital.  
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#### DERMATITIS WITH UNUSUAL DISTRIBUTION FOLLOWING THE USE OF SULFATHIAZOLE

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The many cutaneous manifestations of acquired sensitivity to the sulfonamide compounds have become well known with the widespread use of these drugs.<sup>1</sup> The present case is reported because of the singular distribution of a dermatitis which broke out on two occasions following the use of sulfathiazole. In both instances it developed on areas of skin exposed to the sun and was limited to these. The case is also reported as an example of a severe reaction following administration of sulfathiazole by mouth ten days after it had been used topically in an ointment.

#### REPORT OF CASE

J. F., a technical sergeant aged 25, was admitted to an evacuation hospital June 24, 1942 because of a severe dermatitis on his hands, face and neck. Two and a half weeks before admission a few pustules appeared on the chin. A diagnosis of impetigo contagiosa was made, and sulfathiazole ointment was applied daily for four days. Because the lesions did not heal, gentian violet therapy was substituted for the sulfathiazole ointment. After ten days of treatment the pustular eruption had practically disappeared and the patient was allowed to shave. He was given sulfathiazole to take by mouth. He took the first and only dose (1 Gm.) at 7 p. m. By 7:30 his face and hands felt hot and by 8 o'clock a vesicular rash had broken out on his face. He took no more sulfathiazole, reported for sick call the next morning and was sent directly to the hospital.

The patient was on active duty in the South Pacific. He had never taken any of the sulfonamide compounds before the present illness. On admission his face, ears, scalp and neck and the backs of both hands were covered with a severe dermatitis. The eruption also involved the small triangular area of the neck exposed by an open collar and was sharply limited here to the exposed skin. There was vesiculation with weeping and crusting, severe erythema of the involved skin and edema with induration of the subcutaneous tissue. The striking feature was that only those areas of the skin exposed to the sun were involved. The ocular and palpebral conjunctivas were red and injected. The postauricular and cervical lymph nodes were enlarged and tender. Otherwise the results of the examination were negative.

The blood count revealed 5,200,000 red blood cells per cubic millimeter and 16,600 white blood cells. The hemoglobin reading was 100 per cent. The differential count showed neutrophils 58 per cent, lymphocytes 12 per cent, eosinophils 20 per cent, basophils 6 per cent and monocytes 4 per cent. Urinalysis gave normal results.

The vesicles enlarged, and many became confluent during the next few days. The eruption did not spread, but existing lesions showed no evidence of healing. The patient was treated symptomatically with sedatives and fluids. On the sixth day after admission he complained of feeling "groggy and warm." The skin of his hands and face was more flushed than before. During the night his temperature rose to 102 F. By morning the fluid in all the vesicles and bullae had become purulent, and the patient was extremely ill. The loose epidermis was cleared away and a 1 per cent solution of gentian violet was applied to the denuded areas. Fluids were forced and sulfadiazine medication was started, 4 Gm. initially and 1 Gm. every four hours thereafter being given. A blood culture was taken but no growth resulted. Twenty-four hours after the sulfadiazine therapy had been started a scarlatiniform rash was noted on his shoulders, chest and abdomen. The sulfadiazine was stopped and the rash disappeared within forty-eight hours. There was no apparent change in the character of the eruption on the face, neck and hands after sulfadiazine had been given. The patient recovered promptly from the acute systemic phase.

From the Fifty Second Evacuation Hospital.  
1 Long, P. H., Haviland, J. W., Edwards, L. B. and Bliss, Eleanor A. The Toxic Manifestations of Sulfanilamide and Its Derivatives with Reference to Their Importance in the Course of Therapy, *J. A. M. A.* 115:364 (Aug. 3) 1940. *Chemotherapy in Infectious Diseases and Other Infections*. Circular Letter No. 17, issued Feb. 23, 1942, by the Office of the Surgeon General, U. S. A., Washington, D. C. Brooks, Clyde. The Toxic Effects of Sulfanilamide and Sulfapyridine, *New Orleans M. & S. J.* 92:115 (Sept.) 1939. Janeway, Charles A. The Sulfonamides. I. Their Mode of Action and Pharmacology. *New England J. Med.* 227:989 (Dec. 24) 1942.

of the infection and his temperature dropped to normal within three days. The lesions on his skin healed slowly, however.

Because the patient was going into a combat zone, it was thought important to establish his sensitivity to sulfathiazole. Accordingly, six weeks later 5 per cent sulfathiazole ointment was applied to the back of one hand and a similar amount of 5 per cent boric acid ointment to the back of the other as a control. A few small vesicles appeared under the sulfathiazole ointment within twenty-four hours. The next day the patient was given sulfathiazole by mouth, 0.5 Gm. for three doses. During the night his face became flushed and by morning the cutaneous areas of his face, ears and neck were red, weeping and crusted, exactly as they had been on admission. These tests left little doubt that the condition of the patient's skin was the result of sensitivity to sulfathiazole.

Ten weeks after admission he was sent back to his unit. The first morning after his return, his face, ears and neck were again covered by a red vesicular eruption with oozing and crusting. His hands were not involved this time. The explanation for this flare-up was obscure though it seemed probable that some sulfathiazole ointment had got onto his blankets at the time it was first applied to his face for impetigo and that contact with the ointment on these blankets had caused this latest flare-up. On final discharge he was issued new blankets. When seen one month later he had suffered no recurrences. Because he reacted so violently to sulfathiazole a notice was attached to his identification tags stating that he was extremely sensitive to this drug.

#### COMMENT

The distribution of the cutaneous lesions in this case was so definitely limited to the areas exposed to the sun that it was thought there must have been a relationship between the reaction of these portions of the skin to sulfathiazole and the effect of sunlight on the same areas. Photosensitivity of the skin and eyes after the taking of sulfathiazole has been mentioned in the literature.<sup>2</sup> In this case the dermatitis was not precipitated by exposure to sunlight but by the sulfathiazole itself. The first sulfathiazole given to the patient was in an ointment applied to the skin. The patient was ambulatory at this time and thus exposed to strong sunlight most of every day. The dermatitis appeared ten days later, shortly after the administration of the drug by mouth. Therefore it seems probable that sunlight conditioned the skin to a sensitivity to sulfathiazole but did not itself cause the reaction.

Sensitivity in this case was undoubtedly induced by the application of sulfathiazole ointment when the patient was first treated for impetigo contagiosa. He had never taken the drug before. Livingood and Pillsbury,<sup>3</sup> Cohen, Thomas and Kalisch,<sup>4</sup> and Weiner<sup>5</sup> have recently reported similar cases in which sensitivity to sulfathiazole was produced by topical application of that drug. These illustrate the danger of using sulfathiazole ointments without due regard for the onset of reactions.

This man was tested inadvertently for sensitivity to one other sulfonamide compound. He was given sulfadiazine at the time his cutaneous lesions became purulent. Shortly after he took the drug, a rash developed on his trunk and shoulders. The rash was quite different in character from the one due to sulfathiazole. It disappeared after the sulfadiazine was stopped leaving little doubt that it was due to that drug. It is possible that this reaction to sulfadiazine was related to the sensitivity to sulfathiazole. Instances of one sulfonamide compound sensitizing a person to others have been reported.<sup>6</sup> Unfortunately there was not time to test this man further with other sulfonamide compounds.

#### SUMMARY

A soldier developed a severe dermatitis resulting from acquired sensitivity to sulfathiazole. The dermatitis was limited to areas of skin exposed to sunlight. Sensitivity was induced by topical application of sulfathiazole ointment. Measures were taken to prevent this soldier from receiving sulfathiazole if injured.

## Special Article

### AMERICAN HEALTH RESORTS

#### THE IMPORTANCE OF TRACE ELEMENTS IN BIOLOGIC ACTIVITY

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*These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.*

Research on the effects of natural mineral waters for alleviating human ills is becoming more and more recognized in this country. In this paper I discuss that branch of biochemistry which describes the elements usually present in the body only in small amounts. Their physiologic effects recall those of vitamins and enzymes. The brilliant advances in organic biochemistry during recent years have proved the metabolic effects of organic substances present only in infinitesimal amounts. It is not yet well known that these organic substances are usually linked with metallic ions or mineral elements. The study of mineral elements or mineral metabolism of human beings leads to nutritional problems and discussion of dietary habits and their scientific justification, which are questions of importance for the practitioner. It leads further to discussions of the therapeutic value of natural mineral waters. There is no more urgent time than the present to make all efforts to elucidate the healing value of natural mineral springs to the physicians of this country. It is the duty of the medical profession to use spas and watering places for the health and well-being of the nation. The prospect of scientific development of balneology never seemed to be more favorable than now, because, with the new conception of the biochemical properties of mineral elements, research on natural mineral waters is an important part of research on nutrition. Mineral elements which are essential for our well-being may not always be present in sufficient amount in our food. In natural mineral waters, however, these trace elements are enriched. Therefore during a drinking or bathing "cure" a transmineralization takes place in our body. The vital elements like Fe, Cu, Mn, Zn and Co, if deficient, are compensated, while other trace elements like Hg, Cr and Mo react as true pharmacologic or therapeutic agents.

In 1927 with Davidson<sup>1</sup> made the first attempt to interest physicians in natural mineral water from a purely theoretical point of view. In the first section of this paper, entitled "The Significance of Trace Elements in Biologic Processes," it was stated:

We are confronted with the fact that the active substances of a curative water may be present in extremely small amounts and that often only slight traces of a substance suffice to bring about profound biologic changes in animals and man. Every thinking physician who would keep abreast of modern science

From the Research Department of the Saratoga Spa.

1. Baudisch, Oskar and Davidson, David. Natural Mineral Waters in the Light of Modern Research. The Catalytic Action of the Saratoga Springs. Arch. Int. Med. 40: 496-520 (Oct.) 1927.

2. Long, Haviland, Edwards and Bliss. Brooks.<sup>1</sup>

3. Livingood, C. S. and Pillsbury, D. M. Sulfathiazole in Eczematous Pyoderma: Sensitization Reaction to Successive Local and Oral Therapy. Report of Twelve Cases. J. A. M. A. 121: 406 (Feb. 6) 1943.

4. Cohen, M. H., Thomas, H. B. and Kalisch, A. C. Hypersensitivity Produced by the Topical Application of Sulfathiazole. J. A. M. A. 121: 408 (Feb. 6) 1943.

5. Weiner, I. L. Cutaneous Hypersensitivity to Topical Application of Sulfathiazole. J. A. M. A. 131: 411 (Feb. 6) 1943.

6. Nelson, Jack. Acquired Sensitivity to Sulfonamide Drugs. J. A. M. A. 119: 560 (June 13) 1942.

must be conversant with the idea that amounts of substances which are hardly weighable and perhaps only spectroscopically detectable are capable, under certain circumstances, of exerting great biologic effects and are therefore of therapeutic significance. In this respect, modern research in vitamins has brought us much that is astonishing.

During the short time of sixteen years since this was written a remarkable development has taken place in this field, which fifteen to twenty years ago was virgin. It was quite incomprehensible that metallic ions in dilutions of say 1:1,000,000 could be of any value in nutrition or generally in the metabolism of the human body.

The importance of inorganic elements or metallic ions which occur in our body in small amounts or traces has only begun to be appreciated by the medical profession. During the last few years a remarkably rapid development has taken place. New or improved tools like quantitative spectrum analysis and organic chemical reagents have done much to give us more knowledge about the presence and amounts of "trace," "rare" or "minor" elements in different organs of the body and in blood.

The use of natural and radioactive isotopes, the so-called tracer or spy atoms, is of great importance in revealing the fate of trace elements in the living body during metabolism. The use of absorption spectrum methods has also broadened our knowledge concerning the binding of metallic ions in the organic framework and the appearance of metallic complex compounds in the living cell. Hemin, for example, has been found by the spectroscope both in the plant and in the animal kingdom. The similarity between the pigments of plants (chlorophyll) and blood (heme compounds) has been definitely established.<sup>2</sup>

With the spectroscope it has been found that many enzyme systems contain metallic ions as, for example, catalase or polyphenolic oxidase. Since enzymes seem to hold a key position in the chemistry of life, the linkage or binding of inorganic elements with organic systems containing proteins is of paramount importance. About the nature of such bonding I shall have more to say later on in the paper.

Concerning the expressions "trace," "minor" or "rare" elements some corrections are needed. From a biologic point of view there is no difference between main and minor elements, between much and little or between abundance and traces. Such a distinction holds well in the mineral kingdom. The living cell, however, selects the elements needed for life regardless of the amount present in its surrounding. For example, sea water contains only 50 micrograms per liter of iodine and 1,400 micrograms per liter of fluorine.<sup>3</sup> Iodine probably needed for the life of kelp is concentrated more than a hundred thousand times in the algae while fluorine remains untouched. The same holds for many other elements. The most striking example is iron, which is present in sea water in the very small amount of 2 micrograms per liter. The concentration of iron in the blood of sea animals is astounding. There are only 0.41 Gm per kilogram of calcium in sea water, but the oyster, for example, builds up its heavy shell of this element, and corals

ultimately build up whole islands. It is an unsolved problem how sea plants or animals capture and concentrate the elements absolutely necessary for life. The present paper contributes to this problem.

Elements present in our body in small quantities were considered, only about twenty years ago, as "negligible impurities." The first great active interest in trace metals was shown by the University of Wisconsin and the Agriculture Department in Washington, especially after it was found that certain severe blood diseases in animals were due to deficiency of trace metals such as copper, cobalt, nickel, zinc, manganese or others. Some soil in the United States simply did not contain enough of one or several of these vital elements, and mineral nutrition deficiency diseases were the result.<sup>4</sup>

Most of the information on mineral deficiency has been obtained through observation and experiments with animals, and only in recent years has medical science become intensively interested in deficiency diseases in animals and in men. In connection with our natural mineral water investigations it is a pleasure to note that recently the medical profession in general has become more interested in nutritional questions. Not only have the vitamins penetrated into the daily work of the practitioner but even the public has become conscious of them. Now what about mineral elements? We must not be astonished that but little is yet known about them and the role they play in the metabolism of the human body. Especially the so-called trace or minor nutritional elements are not even recognized or estimated by the physicians in spite of the great array of scientific publications in this field. It has always been taken for granted that the so-called impurities or minute traces of a great number of elements are always present in our food in sufficient amount, so why should one be excited about them if no one knows anything definite concerning their importance to our well-being?

Let us not forget that the vitamins are present in our body only in minute amounts, like ergosterol on our skin, and they bring about miraculous biochemical actions.

The practitioner of today is conscious of the source of, say, vitamin C, which he prescribes for his patient's diet and knows that not all canned or even fresh fruits contain a sufficient amount of this important vitamin. He knows that fresh potato juice under certain circumstances may contain much more vitamin C than orange juice which has been standing in the open air for several hours. The same practitioner, however, will not be concerned with the question of whether the vegetable he prescribes for his patient was grown on "healthy" soil which contains sufficient amounts of iron, copper and cobalt. This correlation between soil and vegetable or soil, grass, grazing animal and food or diet which he prescribes for his patient is still foreign to his thinking. It will take only a short time before nutritional mineral elements will be treated like vitamins and the practitioner will become familiar with them. Mineral elements are "inorganic vitamins," a now occasionally used term which I introduced seventeen years ago.<sup>5</sup>

<sup>4</sup> Maynard, L. A. Relation of Soil and Plant Deficiencies and of Toxic Constituents in Soils to Animal Nutrition, in Luck, J. M., and Smith, J. H. Annual Review of Biochemistry, Stanford University, Calif., Annual Reviews, Inc., 1941, vol. 10, p. 449.  
<sup>5</sup> Baudisch, Oskar, and Welo, Lars A. Chemische und physikalische Studien zum Mineral insbesondere zum Eisenstoffwechsel, Naturwissenschaften 13: 749, 1925.

<sup>2</sup> Fischer, Hans, and von Seemann, Carl. Die Konstitution des Spirographis Hämins. XXVII. Zur Konstitution der Porphyrine. Ztschr. f. physiol. Chem. 243: 133, 1936.  
<sup>3</sup> One microgram or 1 gamma equals one millionth of a gram.

Perhaps it would be still impossible to speak so boldly about minor nutritional elements and their paramount importance in life processes if the results from the Australian research on cobalt were not known.<sup>6</sup> That the minor nutritional elements have to be taken seriously was excellently demonstrated in this classic research which I like to call "the story of cobalt." Since the research on cobalt has stimulated research on trace elements enormously, I want to relate the story in more detail.

As far back as 1807 it was known that grazing animals, especially sheep in the southern part of Scotland, suffered a disease referred to as "pining." A recognized cure was to shift the sheep to a more succulent herbage or pasture grown on limed soils. A similar disease was observed in New Zealand which was called "bush sickness" or Tauranga disease. The loss of animals through this sickness became so serious that as late as 1895 the Australian government started scientific research to find the cause of the disorder. In 1900 Gilruth<sup>7</sup> stated that in localities where the disease occurred there were "healthy" and "unhealthy" lands and that vegetation grew as luxuriously on one as on the other. It was further observed that the symptoms of the disease were similar to symptoms generally found in nutritional anemia. This finding naturally pointed to a possible deficiency of iron, but experiments did not satisfy the investigators. Anyhow it was found that massive doses of iron were often helpful but not always. It seemed that some unknown substance was present in some of the limonite used as manure and not in the other. The Australian government started shipping iron ores from different parts of the world and used it on different acres of the "unhealthy" land. It thus was possible to select the iron mineral or limonite which gives the best results in preventing "bush sickness." The iron mineral which was found to be the most helpful in preventing the disease was now subjected to an analytical fractionation on a large scale, which one could compare with the fractionation of uranium ores or pitchblende by the Curies, in order to concentrate radium. The costly and tedious work finally led to the assumption that cobalt was the lacking element. The iron minerals or limonites which did not remedy the "bush disease" were extremely low in cobalt, while the limonite which prevented the trouble contained comparatively larger amounts of this metal. It was further found that the soils in bush sick areas contained only a trace of cobalt as compared with the healthful areas. Finally, in 1937 Kidson,<sup>8</sup> in a paper entitled "Cobalt Status of New Zealand Soils," reported that "soil affected with 'bush sickness' and allied stock ailments has comparatively low cobalt content, often less than 2 parts per million of cobalt." The unhealthy soil can be corrected by adding sufficient amounts of cobalt.

Sheep and cattle which are deficient in cobalt show symptoms of anemia, cachexia, loss in appetite and changes in muscles, liver and spleen. They recover if minimal amounts of cobalt are added to the forage (0.03 to 0.1 mg with the sheep and 1.3 to 1 mg

with the cattle daily).<sup>9</sup> The liver which is free of cobalt in the sick animal stores cobalt in the animal receiving daily doses of this element.<sup>10</sup> It is amazing how infinitesimally small are the amounts of cobalt needed in comparison to iron, manganese, copper and zinc, where at least a hundred times this amount is demanded. According to Askew,<sup>10</sup> the sheep needs 0.04 mg of cobalt daily. It is of special importance to know that the amount of cobalt necessary for mammals is so low that even spectrographic methods were not sensitive enough to detect amounts of cobalt in grass or fodder that are sufficient to heal the "bush sickness." Sufficient cobalt could be found in the "healthy" soil and in the liver and spleen of the healthy sheep but not in the grass which the animal must eat in order to get the necessary cobalt. Our methods for the determination and concentration of cobalt with organic reagents have been so improved that cobalt can be detected in grass. We have a similar example in sea water. Despite the fact that cobalt has not yet been found in sea water, it exists in certain sea animals (*Pleurobranchus plumula*—Webb<sup>11</sup>) in relatively large amounts. Thus cobalt must have been enriched by life processes. From these examples we can realize the vital importance of elements which are present only in infinitesimal amounts and cannot be detected by spectroscopic methods, which were always considered the most sensitive ones. Organic reagents like o-nitrosophenol<sup>12</sup> possess a chemical grouping which has a powerful selecting force to link cobalt in a ring structure and hold it. Thus the metal can be enriched and extracted in sufficient amount to be determined either by spectroscopic or by colorimetric methods.<sup>13</sup>

#### WHAT IS THE ACTUAL MECHANISM OF THE BIOLOGIC FUNCTION OF TRACE METALS?

The question "What is the actual mechanism of the biologic function of the trace metals?" is a bold one indeed and difficult to approach. We always fail wherever a real explanation of molecular mechanism is wanted. We know much about the biologic functions of vitamins. An adequate explanation of the actual mechanism in life processes however, is unknown. Vitamins and trace metals like cobalt are functionally similar in certain respects, as both must be present in the right amount in order to be beneficial. A soil with an excess of cobalt becomes again an unhealthy soil. Just a small excess of cobalt above the normal in blood in rats causes polycythemia, a severe blood disease.<sup>14</sup> What must we really investigate in order to find out about the magic force and functions of trace elements and how can we approach this difficult problem? It seems to me that the metal proteids are the keys with which we can enter this obscure realm of science and learn about the mysterious forces which are hidden in the metals or elements. Since the portal of the

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10 Askew N O and others. Literature from 1933 to 1938, New Zealand J Sc & Technol vols 15 to 20.

11 Webb D A. Studies on the Ultimate Composition of Biological Material. *Sci Roy Dublin Soc* 21 487 1937.

12 Baudisch Oskar. A New Chemical Reaction with the Nitrosyl Radical NOH. *Science* 92: 336 (Oct. 11) 1940. Preparation of o-Nitrosophenol from Benzene and Other Aromatic Hydrocarbons at Room Temperature. *J Am. Chem. Soc.* 63 622 1941.

13 Baudisch Oskar and Heggen George. Quantitative Colorimetric Determination of Iron in Biological Material. *Arch. Biochem.* 1: 239 (Dec.) 1942. Cronheim, G. Ortho-nitrosophenol as a New Reagent in Colorimetric Analysis. *Indust & Engin. Chem.* 14 445 1942.

14 Myers, V C, Beard H H, and Barnes B O. Studies in the Nutritional Anemia of the Rat. IV. The Production of Hemoglobinemia and Polycythemia in Normal Animals by Means of Inorganic Elements. *J Biol Chem* 99 463 1931.

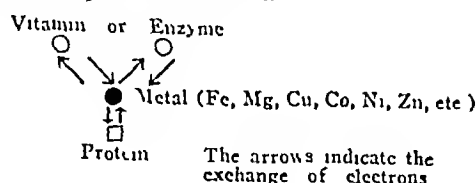
6 Beeson Kenneth C. Literature on Cobalt in Soil and Its Connection with Deficiency Diseases in Animals, Miscellaneous Publication 369. United States Department of Agriculture 1941.

7 Gilruth T A. Bush or Tauranga Diseases in Cattle and Sheep. Annual Report no. 8. New Zealand Department of Agriculture p 187, 1900.

8 Kidson E. B. Cobalt Status on New Zealand Soils. New Zealand J Sc Technol 18 694, 1937.



atom was opened by Rutherford and Bohr, we now can more and more explain chemical or biologic reactions by subatomic forces, i. e. the electrons which build up the atoms. Roughly speaking, the metal exchanges electrons with an added protein molecule of a specific nature and with an added vitamin or enzyme. The following scheme explains the idea.



None of the schemes of chemical reactions provide a reasonable explanation of why these trace elements or ions *in vivo* can do much more than ordinary ions in the test tube.

For instance, an ordinary iron ion decomposes only two molecules of hydrogen peroxide into water and oxygen, whereas under the same circumstances the same amount of iron also in its ionic form, but inserted in a peculiar four nitrogen framework, as present in the enzyme catalase, decomposes millions of hydrogen peroxide molecules. Hardly a more striking example could be given to demonstrate that nature has it in its power to link metallic ions chemically in such a way that they receive tremendously greater power than the iron ion in catalase.<sup>15</sup> It seems to be the type of bonding of the metal with its addenda (vitamins, enzymes, proteins) which determines the function of these combinations in life processes. Catalase, hemoglobin, chlorophyll and certain enzymes must serve us as models for further investigation in this line, because we have definite knowledge as to the constitution of their active derivatives. It is known that reactions between inorganic and organic substances in animals and plants take place with great velocity. The cause of the great velocity of reaction in living cells is found in the great variety of specifically acting catalysers, the so-called enzymes present in the cell. Without enzymes there can be no life. As soon as conditions become unfavorable for enzymatic activity, the vital processes are either greatly inhibited or stopped altogether. Enzymes in living cells represent an exceptionally complete and, one may say, "rational apparatus" for the acceleration of chemical interaction between organic substances.

Under certain circumstances the plain metallic ion itself can react as a prosthetic group. Kubowitz<sup>16</sup> has purified an enzyme which oxidizes polyphenols (polyphenoloxidases) to quinones. Phenol oxidases are of greatest importance in the living cell. Epinephrine action, tyrosinase, as well as ascorbino-oxidase (vitamin C) belong in this category of enzymes.

Kubowitz has shown that these special enzymes are copper proteids. He furthermore showed by ingenious arrangement that copper is the prosthetic group of this enzyme. The copper enzyme was dialyzed against a dilute solution of cyanide which trapped the copper, the enzyme inactivated by this procedure was immediately reactivated by small amounts of copper ions.

The heavy metals presumably act in most metal-enzyme reactions as electron transfer systems, alternating between cuprous and cupric or ferrous and ferric states, but there are still other qualities developed in the combination of metals with organic substances which are of significance in life processes.

Let us mention some other metals which form a part of a combination of organic substances with enzyme-like action.

Manganese is a constituent of the enzyme arginase, which splits arginine into ornithin plus urea.<sup>17</sup>

Zinc is a part of the enzyme carboanhydrase which accelerates the velocity of the reversible reaction  $\text{HCO}_3 \rightleftharpoons \text{CO}_2 + \text{OH}$  more than a million times.<sup>18</sup> Carboanhydrase plays a most important part in the lungs and in other organs.

Aluminum is a constituent of the complex succinoxidase system which plays an important part in sugar metabolism. In this enzyme chromium and aluminum are interchangeable.<sup>19</sup>

Magnesium is a constituent of the enzyme phosphatase, which plays an important part in phosphate metabolism.<sup>20</sup> Carboxylase, an enzyme which splits keto acids, contains magnesium. It is composed of a co-enzyme (thiamine pyrophosphate, vitamin B<sub>1</sub> pyrophosphate) and magnesium.<sup>21</sup> Magnesium possesses some specific and unique character in the animal organism. The living organism undergoes fundamental changes if deprived of this vital element.

Iron is in the enzyme cytochromoxidase (respiration ferment of Warburg<sup>22</sup>), which is composed of a specific protein plus a specific hem compound, plus ferric iron atom.

The examples demonstrate clearly that metallic ions are directly associated with most vital life processes where vitamins or enzymes come into play. Not only are the metals an essential part of the structure of enzymes and vitamins but they seem to form the center of the whole enzyme structure similar to the center metal atoms or ions in the so-called Werner complexes.<sup>23</sup>

If we look back to the cobalt of which we had so much to say in the beginning, we should remember that Werner with a great number of co-workers synthesized hundreds of cobalt compounds in order to study the bonding of addenda to cobalt. In this study and in the fruits of the Werner theory in general lies the basis for the real explanation of the molecular mechanism of the trace metals in life processes. This is not the place to penetrate deeper into this difficult theoretical matter.

#### PHYSIOLOGICALLY IMPORTANT ELEMENTS AND THEIR PLACE IN THE PERIODIC SYSTEM

The periodic system built up on the fundamental basis of electron configuration must be considered the greatest triumph of all science. Not only our planet and all its inhabitants but the whole universe is built up of the ninety-odd elements presented in the periodic table. The chemical elements in our body are among those most common on our planet. We must assume that, before life could be created, masses of simple organic compounds had to be synthesized from the inorganic material which gradually was built up to more compli-

17 Richard M. M. and Hellerman L. Activation of Enzymes IV Purified Liver Arginase Reversible in Activation and Reactivation *J. Biol. Chem.* **134** 237, 1940.

18 Booth V. H. and Roughton F. T. Catalytic Effect of Buffers on the Reaction  $\text{CO}_2 + \text{H}_2\text{O} \rightleftharpoons \text{H}_2\text{CO}_3$ , *J. Physiol.* **92** 36, 1938.

19 Potter V. R. and Schneider W. C. Studies on the Mechanism of Hydrogen Transport in Animal Tissues. Dilution Effect of the Succinoxidase System, *J. Biol. Chem.* **142** 543, 1942.

20 Lohmann, K. Ueber die Pyrophosphat Fraktion im Muskel *Naturwissenschaften* **17** 624, 1929.

21 Ostern, P., Baranowski, T. and Terszakowec F. Phosphorylation of Adenosin by Yeast and This Process in Alcohol Fermentation *J. Physiol. Chem.* **251** 258, 1938.

22 Warburg Otto, and Christian Walter. Pyridin der Wasserstoff übertragende Bestandteil von Gährungsfermenten (Pyridinnukleotide) *Biochem. Ztschr.* **257** 298, 1936.

23 Werner, A. New Ideas in Inorganic Chemistry. New York: Longmans, Green & Co., 1911.

15 Sumner, T. B., Dounce, A. L., and Frampton, V. L. Catalase III. *J. Biol. Chem.* **130** 343, 1940.

16 Kubowitz, I. Ueber die chemische Zusammensetzung der Karboferrinoxidase, *Biochem. Ztschr.* **292** 221, 1937.

cated organic structures. The parent material must have been first of all water, carbon and nitrogen. The few elements which build up organic matter are

$\frac{H}{1}$	$\frac{O}{8}$	$\frac{N}{7}$	$\frac{C}{6}$	$\frac{P}{15}$	$\frac{S}{16}$
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(The numerals are the number of electrons or units of negative electricity.)

These few elements also form the lipoids by means of which the body or cell is separated from the outer world. The lipoids in combination with proteins form the "inner surface." It cannot be doubted that part of the secret of life is the immense internal surface of the cell.

small amounts in natural mineral waters of different origin. It cannot be doubted any more that natural healing waters which have a number of elements in solution extracted them from material which in geologic time went through life processes, either through plants or animal life or both. Elements usually found in traces in natural mineral waters are

$\frac{As}{33}$	$\frac{Sb}{51}$	$\frac{Bi}{83}$	$\frac{Sc}{34}$	$\frac{Sn}{50}$	and $\frac{Pb}{82}$
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It is, however, questionable if these elements are vital for the healthy living cell of the human body. Some of them stimulate life processes in a remarkable way, and from the standpoint of mineral water research

## NUMBER OF ELECTRONS IN SHELL

Shell	THE REPRESENTATIVE ELEMENTS (Differentiating Electron in Outermost Shell)								THE RELATED METALS (Differentiating Electron in Second from Outermost Shell)										THE RARE EARTHS (Differentiating Electron in Third from Outermost Shell)					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21-30	31	32	
K	H 1.008 K 1	He 4.002 K 2							(III B)	(IV B)	(V B)	(VI B)	(VII B)	VIII			(I B)	(II B)						
L	Li 6.94 K L 21	Be 9.02 K L 22	B 10.82 K L 23	C 12.00 K L 24	N 14.008 K L 25	O 16.000 K L 26	F 18.00 K L 27	Ne 20.183 K L 28																
M	Na 22.997 K L M 29	Mg 24.32 K L M 30	Al 26.97 K L M 31	Si 28.06 K L M 32	P 30.97 K L M 33	S 32.06 K L M 34	Cl 35.457 K L M 35	A 39.948 K L M 36	Sc 44.96 L M N 39	Ti 47.90 L M N 40	V 50.94 L M N 41	Cr 52.01 L M N 42	Mn 54.94 L M N 43	Fe 55.84 L M N 44	Co 58.94 L M N 45	Ni 58.69 L M N 46	Cu 63.57 L M N 47	Zn 65.38 L M N 48						
N	K 39.098 L M N 19	Ca 40.08 L M N 20	Ga 69.72 L M N 31	Ge 72.60 L M N 32	As 74.91 L M N 33	Se 78.96 L M N 34	Br 79.916 L M N 35	Kr 83.7 L M N 36	Yt 88.92 M N O 39	Zr 91.22 M N O 40	Cb 92.91 M N O 41	Mo 96.0 M N O 42	Ma 99 M N O 43	Ru 101.7 M N O 44	Rh 102.91 M N O 45	Pd 106.7 M N O 46	Ag 107.88 M N O 47	Cd 112.41 M N O 48	Ce 140.13 199.2	Pr 140.92 209.2				
O	Rb 85.47 M N O 37	Sr 87.63 M N O 38	In 114.76 M N O 49	Sn 118.70 M N O 50	Sb 121.76 M N O 51	Te 127.61 M N O 52	I 126.92 M N O 53	Xe 131.3 M N O 54	La 138.92 M N O 57	Hf 178.6 M N O 72	Ta 180.9 M N O 73	W 183.85 M N O 74	Re 186.21 M N O 75	Os 189.6 M N O 76	Ir 186.21 M N O 77	Pt 195.08 M N O 78	Au 197.0 M N O 79	Hg 200.59 M N O 80						
P	Cs 132.91 M N O 55	Ba 137.34 M N O 56	Tl 204.38 M N O 81	Pb 207.2 M N O 82	Bi 208.98 M N O 83	Po 210 M N O 84	? 212 M N O 85	Rn 222 M N O 86	Ac 227 O P Q 189.2	Th 232.04 O P Q 190.2	Ux 235 O P Q 189.2	U 238.04 O P Q 190.2												
Q	? 168.1 O P Q 168.1	Ra 226.075 O P Q 168.2																						

An improved periodic table by W F Luder J Chem Educ 16 393 (Aug) 1939

Essential for any system of the cell is that it be an energy system.

The elements which govern the water balance in the body are

$\frac{Na}{11}$	$\frac{Mg}{12}$	$\frac{K}{19}$	and	$\frac{Ca}{20}$
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In close partnership with them are the elements

$\frac{Li}{3}$	$\frac{Be}{4}$	$\frac{Rb}{37}$	$\frac{Sr}{38}$	$\frac{Cs}{55}$	and perhaps	$\frac{Ba}{56}$
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In what degree these elements are connected with water absorption and water excretion is not known. It is to be assumed that these highly hydrated metals remain in ionic salt form in the tissue fluid.

There are a number of other elements which seem to be important in life processes. All of them are found in

arsenic<sup>24</sup> has always been a therapeutic agent. There are 63.8 micrograms of arsenic per hundred cubic centimeters in the human blood, which increases in pregnancy during the fifth and sixth month to 222 micrograms. Lead is a normal constituent of sea water and is always present in crustacea and mollusks. Tin has been found in the tongue. Also the following elements are necessary for life either in plants or in animals.

$\frac{B}{5}$	$\frac{F}{9}$	$\frac{Al}{13}$	$\frac{Si}{14}$	$\frac{Cl}{17}$	$\frac{Br}{35}$	$\frac{I}{53}$	$\frac{Ga}{31}$	$\frac{Ge}{32}$
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Gallium and germanium are constant companions of aluminum and silica. Boron is of great importance in

<sup>24</sup> Bertrand G. Sur l'existence de l'arsenic dans l'organisme. Compt. rend. Soc. de biol. 134 1434 1902. Schwarz, L. and Deckert W. Studien zur Beartung von Arsenbefunden in Ausscheidungen und Hautanhangen. Arch. f. Hyg. 106 346 1931.

plant life, especially in tobacco and buckwheat. There is but little known about its role in the human body. It is certain that boron plays a part in the calcium metabolism. Spiro,<sup>25</sup> for example, has shown that the boric acid ( $\text{HBO}_3$ ) occurring in the mineral water of Baden (Switzerland) is easily reabsorbed. Because it is itself lipid soluble and readily forms complexes, the physiologic behavior deserves special attention. The scientific studies of boron compounds in Saratoga water will doubtless improve the understanding of its therapeutic value and application. The presence of boron in human blood and milk has been demonstrated.<sup>26</sup>

The therapeutic importance of silica,  $\text{SiO}_2$  or  $\text{H}_2\text{SiO}_3$ , in Saratoga mineral waters is not to be underestimated. One of the Saratoga springs, Red Spring, has been esteemed for many decades by the populace as an eye-wash and as a skin beautifier. The cosmetic effect of this spring can be attributed to monosilicic acid, forming a film of colloidal  $\text{H}_2\text{SiO}_3$  on the skin. The fact that the aqueous humor of the human eye contains silicon is perhaps more than just an interesting correlation. It is very notable that  $\text{SiO}_2$  is absorbed by the mucous membrane of the respiratory passages during inhalation.<sup>27</sup> That the skin needs silica is an established fact. Fluorine<sup>28</sup> causes a general cachexia and mottled teeth. Not more than 1.5 parts per million is generally considered safe. The difference between 0.0 and 1.0 part per million of fluorine in the domestic water supply has been shown to be highly significant from the standpoint of the amount of dental decay in a community. While small amounts of fluorine prevent decay, larger amounts produce mottled teeth.

The vital importance of bromine, similar to iodine, in human life, and in the metabolism of mammals in general, is today an established fact. It is a normal constituent of the pituitary gland. There is about as much bromine in the pituitary gland as there is iodine in the thyroid gland. According to Moruzzi<sup>29</sup> and to Zondek and Bier,<sup>30</sup> bromine is enriched in the pituitary gland and plays here an important part in correlation with iodine in the thyroid. The human pituitary gland contains an average of 0.701 mg of bromine per hundred cubic centimeters in fresh organs. Zondek and Bier found that the blood bromine is lowered to half its normal figure in cases of "depressive mania" psychosis. Bathing cures at the thermes of Bourbonne-les-bains, which contain rather large amounts of bromine but practically no iodine, bring about a calming and soothing effect. The patient falls into a state of euphoria, pain disappears and a deep sleep follows.

Iodine<sup>31</sup> is the classic trace element of whose value even the public has been conscious for many years. It is known that iodine deficiency is usually the cause of thyroid hyperplasia. The incidence of goiter has received a great deal of attention in the United States. Many investigations have been made of the iodine content of foods grown in goitrous regions and in goiter free regions. Goiter is quite prevalent in New Zealand.

It has been found that New Zealand cow's milk from the goiter free regions contained three times as much iodine as did that from affected regions.<sup>32</sup> Saratoga water contains relatively large amounts of iodine, and drinking an 8 ounce glass of this water a day would be enough to prevent goiter. Drinking of natural mineral waters containing iodine, such as the waters of Bad Tolz or Salsomaggiore, increase the excretion of uric acid considerably.<sup>33</sup> Iodine in natural mineral waters is present solely in the form of iodide ions, which easily penetrate not only mucous membranes but also the skin. Most of the iodine waters also contain sodium chloride, like Saratoga Springs waters, which in addition to chlorine contain bicarbonate and bromine ions.

There exists today a wide knowledge concerning the biologic action of copper which I shall not describe in detail in this publication. From our point of view, however, it is important to state the fact that this metal has the greatest distribution as a constituent of natural mineral waters. It is present in small amounts in Saratoga mineral water, from 1 to 10 micrograms per liter. From the point of view of balneotherapy it is interesting to note that copper, like divalent iron, is absorbed by the skin. It has been proved experimentally that copper, like manganese, is stored in the liver. Boyden, Potter and Elvehjem<sup>34</sup> proved that rats which receive large quantities of copper in their food store a great deal of that copper in the liver. The value for liver copper rose to three hundred times the normal values, while values for the blood and spleen rose only to two to five times the normal. Lundegardh and Bergstrand,<sup>35</sup> who made extensive investigations concerning copper in the liver of man, found it difficult to make statements about the normal value in the liver. Gerlach,<sup>36</sup> who examined 7 healthy persons who died suddenly and ought, therefore, to have exhibited normal values, found figures which vary between 3 and 13 micrograms per gram of fresh weight with a mean figure of 7.5 micrograms, i. e. 7.5 mg per kilogram.

Gerlach's as well as Lundegardh's and Bergstrand's investigations proved the strange circumstance that the mean copper values were increased in tuberculosis.

The values in secondary anemias have naturally been of great interest since Hart, Steenbock, Elvehjem, Waddell and others showed that copper is a necessary supplement to iron to render possible the utilization of hemoglobin. It might be imagined that under such conditions the copper in liver is influenced, in one direction or another, in secondary anemia. According to Lesné and Briskas<sup>37</sup> the copper content stands in inverse relation to the iron content, so that low iron values are accompanied by high copper values. Lundegardh and Bergstrand<sup>38</sup> find remarkably high values among 5 cases of viridans sepsis, in that 2 cases show values of 8.7 mg per kilogram and 1 the enormous value of 135.5 mg per kilogram, which is about twenty-five times the normal mean value. According to Lundegardh, Bergstrand and others, the fetal liver is on the whole richer in copper than that of adults. From the point of view of balneology it is of especial interest

25 Spiro K. Biologische Bedeutung der in kleinen Mengen vorkommenden anorganischen Elemente, Deutsche med. Wchnschr. 51: 633, 1925.

26 Orent Keiles, Elsa. Role of Boron in the Diet of the Rat, Proc Soc Exper Biol & Med 44: 199, 1940.

27 Kraut H. Ueber den Kieselsäuregehalt des menschlichen Blutes und seine Veränderung durch Kieselsäure Zufuhr. Ztschr f physiol Chem 191: 81, 1931.

28 McClure F. T. A. A Review of Fluorine and Its Physiological Effects, Physiol Rev 13: 277, 1933.

29 Moruzzi Giovanni. Contributo allo studio del bromo negli organi, Ber d ges Physiol 107: 183, 1938.

30 Zondek Hermann, and Bier, Artur. Hypophyse und Schlaf, klin Wchnschr 1: 760, 1932.

31 Shohl Alfred T. Mineral Metabolism, New York Reinhold Publishing Corporation, 1939 p. 233.

32 Hercus Charles E. Endemic Goiter in New Zealand and Its Relation to the Soil Iodine, J Hyg 24: 321, 1925.

33 Cardin A. Arch ital se farmacol 7: 242, 1938.

34 Elvehjem, C. A. The Biological Significance of Copper and Its Relation to Iron Metabolism, Physiol Rev 15: 471, 1935.

35 Lundegardh, Henrik, and Bergstrand. Hilding. Spectral Analytical Investigation into the Content of Mineral Substances in Liver. Nova acta regine Soc sc Uppsala 12, No 3, 1940.

36 Gerlach W. Untersuchungen über den Kupfergehalt menschlicher Organe, Virchows Arch f path. Anat 294: 171, 197, 1934.

37 Lesné, E., and Briskas S. Contribution à l'étude du métabolisme du cuivre chez le nourrisson, Acta paediat 22: 123, 1938.

that copper influences the endocrine system. For instance, the antagonism between copper and the thyroid hormones is very noticeable. Thyroxine becomes inactive or detoxified by forming a stable complex compound with this metal.<sup>38</sup> The amount of copper in blood after thyroidectomy is lowered. It rises on addition of thyroxine.<sup>39</sup> In infectious rheumatism of the joints, the copper content of the blood is doubled. Heilmeyer<sup>40</sup> explains this as due to a mobilization of copper in order to neutralize the bacterial toxins. The proposed drinking "cures" by copper-containing springs in cases of infectious rheumatic diseases thus receive a remarkable motivation.

Many more of the "related metals" (see periodic table) are found in the human body. We find quite an array in Saratoga mineral water. The list of related metals found in biologic matter is given in the accompanying table.

Zinc is an element necessary for life. Experiments on rats have shown that zinc is necessary for normal growth. Its deficiency brings about disturbances of genital functions, nitrogen assimilation and normal hair growth. Falling out of hair and hair changes seem to be directly connected with the presence or absence of this element.<sup>41</sup> The daily amount of zinc necessary for man is larger than that of iron, copper or manganese. According to Howe, Elvehjem and Hart,<sup>42</sup> the daily requirement of zinc is 0.25 mg per kilogram.

It is possible that zinc deficiency is quite frequent. Since many natural mineral waters, including Saratoga spring waters, contain small amounts of zinc, the drinking of such water might be of value and beneficial for certain diseases. Zinc has an antidiabetic reaction.<sup>43</sup> Sea water is remarkably rich in zinc, but its amount seems to fluctuate according to location and depth. In the Atlantic Ocean between 0.002 and 0.008 mg per kilogram has been found. Some sea animals enrich zinc more than a thousand times in their bodies.<sup>44</sup> It is of significance that in the human liver there is 32 mg of zinc but only 2 mg of manganese and 5 mg of copper.<sup>45</sup> Milk, which contains only the smallest traces of iron, copper and manganese, has as much zinc as 0.5 mg per kilogram.<sup>46</sup> The relation of zinc to the genital spheres has often been demonstrated.<sup>41</sup> Zinc activates the hypoglycemic action of insulin.<sup>46</sup> It also activates the ferment carboxylase.<sup>47</sup> It is of great significance and in direct accordance with our discussion concerning bond type and physiologic action of mineral elements that in insulin zinc is in organic binding. Because of

similar behavior of zinc toward amino acids it is assumed that the zinc in insulin is linked in a ring structure. The valences which link the zinc originate partly from carboxyl groupings and partly from amino groupings. Such a linkage is typical for so-called inner complex compounds (chelate binding), which play an important part in biochemistry. The saturation of insulin with zinc lies between 27 and 35 per cent.

Manganese is one of the first trace elements which has been found to be of value in plant life.<sup>48</sup> In recent years various investigators have demonstrated that manganese is essential for the health and well-being of the human and animal organism. It is obvious that the manganese originates from the soil, goes into the growing plant and from here enters the animal organism if the plants are nutrients. If the soil is deficient in manganese, the plants grown in such soil will suffer a manganese deficiency and the animals eating the plants may develop a deficiency disease. However, little is known about such diseases and about the specific biologic function of manganese in the human body. Orent and McCollum<sup>49</sup> found that manganese aids lactation and prevents degeneration and atrophy of the testes in the rat. In the chick it is effective in preventing the development of the bone condition known as perosis.<sup>49</sup> Manganese has

Related Metals Found in Biologic Matter

Tl	V	Cr	Mn	Fe	Co	Ni	Cu	Zn
22	23	24	25	26	27	28	29	30
	Mo						Ag	Od
	42						47 <sup>2</sup>	48
	W							
	74							
	U							Hg
	92							80

been found to serve as an activator of certain enzymes, notably arginase, phosphoglucomutase and certain peptidases.<sup>50</sup>

Manganese, like other metals, is stored up in the liver, which is the organ most abundant in manganese. According to Reiman and Minot<sup>51</sup> the human liver contains from 12 to 351 mg manganese per kilogram of fresh weight. The manganese values in the liver do not vary so much as those for iron and copper. However, remarkably low values are noted in cases of pneumonoma.<sup>52</sup> The disease group in which the value appears to be raised is pulmonary tuberculosis. In contrast to copper and iron, manganese does not appear to be especially abundant in the newborn child, and the values lie considerably below those found for adults. The stored manganese rises in a very striking manner between the ages of 20 and 30 years and is very stable on a level which is about 50 per cent above that of the period of adolescence (198 mg per kilogram). Children need about 0.2 to 0.3 mg of

38 Hesse, Erich and Jacoby, K. R. Die Entgiftung des Schildkröten-Hormones. *Klin. Wchnschr.* 2: 2117, 1932.

39 Narasaka, S. Studies in Biochemistry of Copper. XXI. Thyroxine as a Factor in the Regulation of Blood Copper Level. *Jap. J. M. Sc. II Biochem.* 3: 273, 1937. XXII. Effect of Thyroxine on Blood Copper in Thyroidectomized Animals. *Ibid.* 4: 25, 1938.

40 Heilmeyer, Ludwig and Gunther, Stewe. Der Eisen-Kupfer-Antagonismus im Blutplasma beim Infektionsgeschehen. *Klin. Wchnschr.* 17: 925, 1938.

41 Gabriel, Bertrand and Vladescu, R. Sur le causes de variation de la teneur en zinc des animaux vertébrés. *Compt. rend. Acad. d. sc. Paris* 172: 768, 1921. 173: 176, 1921.

42 Howe, E., Elvehjem, C. A. and Hart, E. B. The Physiology of Zinc in the Nutrition of the Rat. *Am. J. Physiol.* 119: 768, 1937. Edlbacher, S. and Pinosch, H. Ueber die Natur der Arginase. *Ztschr. f. physiol. Chem.* 250: 241, 1937. Edlbacher, S. and Baur, H. Zur Kenntnis der Natur der Hefe- und Leberarginase. *Naturwissenschaften* 26: 267, 1938.

43 Hausler, H. and Schnetz, H. Die Hemmung der Adrenalin-glykogenolyse an der Froschleber durch Metalle. *Biochem. Ztschr.* 276: 204, 1935.

44 Webb, David A. and Fearson, W. R. Studies in the Ultimate Composition of Biological Material. *Sc. Roy. Dublin Soc.* 21: 487, 1937.

45 Todd, W. R., Elvehjem, C. A. and Hart, E. B. Zinc in the Nutrition of the Rat. *Am. J. Physiol.* 107: 146, 1937.

46 Scott, D. A. and Fisher, A. M. The Insulin and the Zinc Content of Normal and Diabetic Pancreas. *J. Clin. Investigation* 17: 725, 1938. Fisher, A. M. and Scott, D. A. Spermin Zinc and Insulin. *J. Pharmacol. & Exper. Therap.* 61: 21, 1937.

47 Lohmann, K. and Kossel, A. J. The Effect of Zinc and Other Metals on Carboxylase. *Naturwissenschaften* 27: 595, 1939.

48 Orent, Elsa R. and McCollum, E. V. Effect of Deprivation of Manganese in the Rat. *J. Biol. Chem.* 92: 651, 1931.

49 Heller, V. G. and Penquite, Robert. Factors Producing and Preventing Perosis. *Poultry Sc.* 1937, No. 243. Wilgus, H. S., Norris, L. C. and Heuser, G. Role of Manganese and Certain Other Trace Elements in the Prevention of Perosis. *J. Nutrition* 14: 155, 1937.

50 Edlbacher, S., and Pinosch, H. Ueber die Natur der Arginase. *J. Physiol. Chem.* 250: 241, 1937. Edlbacher, S. and Baur, H. Zur Kenntnis der Natur der Hefe- und Leberarginase. *Naturwissenschaften* 26: 267, 1938.

51 Reiman, C. K. and Minot, A. S. A Method for Manganese Quantitation in Biological Material Together with Data on the Manganese Content of Human Blood and Tissues. *J. Biol. Chem.* 42: 329, 1920.

manganese per kilogram<sup>55</sup> Recent experiments carried out by Greenberg and Campbell<sup>52</sup> with the radioactive isotope of manganese  $Mn^{57}$  (labeled manganese) have added much to our knowledge concerning the fate of manganese in the animal body. The experiments were carried out on rats on a normal control diet. Most of the manganese is excreted in the feces whether it is administered orally or by injection. This agrees with the finding of Skinner, Peterson and Steenbock,<sup>53</sup> who have reported that 80 to 99 per cent of orally fed manganese was excreted in the feces, depending on the amount ingested. When manganese was administered orally, 28 per cent of retained manganese was found in the liver, bone, muscle and blood, the liver showing the largest uptake. Little, if any, of the absorbed manganese is excreted in the urine. When the manganese was administered by injection, the retained manganese was found in the skin, bone, liver, muscle, small intestine and stomach, the skin and bone showing rather large amounts. Other tissues showed no significant amount. Muscle and skin, apparently, are important sites for the storage of manganese that is absorbed, especially as the tissues represent a large portion of the mass of the animal. Bone and liver also seem to be important in the storage of manganese. The manganese found in the liver may be an indication of its excretion into the bile, or it may be connected in some manner with the activation of certain enzymes found in the liver. Manganese is supposed to be the co-enzyme of a proteid which is important in synthesis. Rudra<sup>54</sup> has shown that manganese probably plays a part in the synthesis of ascorbic acid in the liver.

Concerning the effect of manganese on polycythemic animals, it has been found that manganese has some stabilizing influence on the increased hemoglobin, erythrocyte, cell volume and blood volume values characteristic of cobalt polycythemia<sup>14</sup> and acts in some way to alleviate the toxic condition resulting from the long-continued administration of small quantities of cobalt.

#### SUBSURFACE AND SEA WATER IN THERAPY

On account of the analytical composition of Saratoga Spa water and sea water, similar except for sulfates and phosphates, we are able to apply the results and experiences obtained from sea water drinking cures to drinking of natural mineral water, especially Saratoga waters. From earliest times ocean water as well as natural mineral waters similar to Saratoga water have been given by mouth with results that proved both beneficial and lasting. Both types of water are of true medicinal value and bring about a transmineralization of the living cells of the body. The mineral elements in our body, even in the bones of adults or in teeth of growing children, are constantly replaced by other or new ones. Our food and drinking water supply these minerals. It is one of the remarkable chapters in physiology that not long ago the so-called "ash" part of our body was considered more or less negligible. Today we know not only that each single mineral element plays its important part in life, but that the antagonism and synergism of the elements make life possible. The most obvious instance of

biologic antagonism can be seen in the mutual relation of calcium and potassium (heart beat) and of calcium and magnesium (muscle activity). Calcium and iron stand in mutual relationship (anemia) and many more such cases could be demonstrated. The calcium necessary for heart beat and the bones is formed in a special Werner complex in combination with phosphorus and carbon dioxide.

Our whole skeleton is rebuilt continuously, and calcium is one of the important building materials which we have to furnish in sufficient amount. Calcium assimilation is only one small part of the whole complicated problem of transmineralization of the body by the internal use of mineral water.

In this connection it is a logical question, and one of the most far reaching in relation to our whole problem, to ask "What really happens if we transmineralize or change our natural salt solutions in the blood serum and in the cells?" In order to answer this question and all of its implications completely, it would be necessary to study analytically all the changes of all the different organ functions by variation of salt mixtures and concentrations, and we would have to tabulate up the results and study the new functions of all the different organs. In this way we could ultimately reach our goal of introducing a sound theory of mineral water therapy and of drinking "cures." We are far from this goal, but we know our problem and how to approach it.

In order to tackle this problem from its basis, we must know how single cells behave toward surrounding salt solutions and then extend our knowledge in order to be able to apply it to the cells of higher animals and of man.

In our special problem concerning trace elements, we must confess that we are still far behind in being able to make concrete statements. We are not yet certain in the contention that the healing action of the waters should be ascribed mainly to the elements present only in minute amounts, but we do know that these elements are certainly of additional therapeutic value. The problem is most complex. We must ask the question as to how these substances act on the human body in sickness and in health, and what part they play in the vital processes. We must consider that the substances in mineral waters which act on the patient are almost all constituents of the human body and are replaced continuously. Our knowledge concerning deficiency of certain elements in the human body is today mainly focused on iron and iodine. Natural mineral waters of the Saratoga type are certainly healing waters in cases where these elements are deficient in the body. From all I have said here we see there can be no doubt that all the small amounts of numerous elements present in sea water or in the soil must have entered the life process genetically and become essential parts of living substances. Such knowledge alone should be helpful in making natural mineral waters at least interesting to the physicians and the biologists and rouse their attention in a scientific manner. If nature puts so much stress in her inventive power on linking metal ions into the organic structure of living matter, they certainly must be of paramount importance for life in general. The metal proteids in vitamin and enzyme systems are only one small group which proves this statement. The study of trace elements has already raised natural mineral water therapeutics to a high level of importance. It has made research on natural mineral waters rank equal with that on vitamins and enzymes, and shown the necessity of integrating the two fields.

52 Greenberg, David and Campbell, W. Wesley. *Studies in Mineral Metabolism with the Aid of Induced Radioactive Isotopes*. IV. Manganese. *Proc. Nat. Acad. Sci.* 26: 448, 1940.

53 Skinner, J. T., Peterson, W. H., and Steenbock, Harry. Ueber die Wirkung von Mangan und Pflanzen Asche auf das Wachstum und die Hämoglobinsynthese. *Biochem. Ztschr.* 250: 392, 1932.

54 Rudra, M. N. Manganese in the Biological Synthesis of Ascorbic Acid. The Synthesis of Indophenol Reducing Substances by Guinea Pig Liver in Vitro and in Vivo. *J. Indian Chem. Soc.* 17: 705, 1940.



## Council on Foods and Nutrition

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING  
REPORT  
GEORGE K. ANDERSON M.D., Secretary

### MINERAL OIL (LIQUID PETROLATUM) IN FOODS

Ever since the reports of Dutcher and his collaborators<sup>1</sup> and of Burrows and Farr<sup>2</sup> in 1927 it has been known that liquid petrolatum (mineral oil) interferes with the absorption of carotene. Several years ago the Council as a result of considerations of a salad dressing containing mineral oil, which was designed for convenience in the formulation of therapeutic diets low in fat, called attention to the evidence then available about this possible deleterious effect and concluded that salad dressings containing mineral oil should be used only under the direction of a competent physician.<sup>3</sup> Since that time the situation has changed. The use of mineral oil in foods has increased, and much of the mineral oil so used is being taken without proper medical advice and often no doubt without the knowledge of the person consuming the food. The evidence obtained from newer studies of the effects of the ingestion of mineral oil shows conclusively that the harmful potentialities of mineral oil are far greater than had been supposed. Because of these developments the Council decided to prepare the present brief account of the evidence now available with the view to reaching a decision about the acceptability of food products containing mineral oil and to informing physicians and others of its views.

As long ago as 1914 the Council on Pharmacy and Chemistry<sup>4</sup> published a report on liquid petrolatum in which it was mentioned that the introduction of this laxative on a fairly extensive scale in medical practice occurred in the period around 1905 to 1910. Today self medication with mineral oil and other laxative drugs regrettably is common. Although constipation usually is a symptom of little significance Logan<sup>5</sup> has pointed out that it caused more than half the patients with gastric cancer to seek advice at the Roosevelt Hospital in New York.

Mineral oil has been recommended for the cooking of foods. Potato chips prepared in mineral oil have been placed on the market, and the use of mineral oil in the frying of doughnuts has been suggested.

From reports that have come to the attention of the Council it is evident that the use of mineral oil in foods has increased considerably, especially in the form of imitation mayonnaise or salad dressing in which mineral oil replaces the usual food oils that one would expect to find in such preparations. Even when these products are labeled to declare the presence of mineral oil, it is obvious that the consumer has no opportunity to read the labels when they are affixed on gallon size containers and sold to restaurants and institutions. Federal and state authorities having jurisdiction over foods can take suitable action against food products introduced into commerce without proper labeling. However, even labeling showing the presence of mineral oil in salad dressings does not afford adequate protection to the consumer who has no opportunity to read the label or who is possessed of insufficient information to comprehend the significance of statements required by regulations.

There are a number of reasons why there has been an increased use of mineral oil as an ingredient of certain foods. Physically these products can be made so that they cannot be differentiated, except in a laboratory, from ordinary products containing true fats or oils. The mineral oil products do not become rancid, and they may be kept for long periods of time without refrigeration. Mineral oil provides no food value, and products containing it are sometimes referred to especially on restaurant menus, as 'nonfattening' or 'slenderizing.' They usually can be produced much more cheaply than foods contain-

ing animal or vegetable oils and, unlike ordinary food oils and fats, mineral oil is plentiful and requires no ration points. Is it any wonder that the use of mineral oil in foods has tended to increase alarmingly?

#### THE ALIMENTARY BEHAVIOR OF MINERAL OIL

**Absorption**—In 1884 Randolph<sup>6</sup> studied the absorption of a preparation of petrolatum and showed that, within the limits of analytical error, it could be recovered quantitatively in the feces. Other workers later showed that liquid petrolatum is relatively nonabsorbable from the alimentary tract, whether the oil is of the paraffin hydrocarbon type obtained from Pennsylvania crude oils or is of the squalene and naphthene type produced from Russian or California crude oils. It was not until 1932 that it was reported by Channon and Collinson<sup>7</sup> that small traces of mineral oil could be absorbed by animals and deposited in the liver. Stryker<sup>8</sup> in 1941 made a thorough microscopic and chemical study of the absorption of liquid petrolatum by rabbits, white rats and guinea pigs. The amounts of mineral oil administered daily were large, for example, 20 or 30 cc. to rabbits for several months. Gross examination of the bodies of the experimental animals after they had been killed showed white nodules in the intestine of the rabbits, involvement of the mesenteric lymph nodes of the rats with yellow flecks in the liver, and no demonstrable lesions in the guinea pigs. Microscopic examinations revealed the presence of oleophages in certain cells usually in the superficial lamina propria near the tips of the villi, but occasionally deeper in the cells and, in all three species of animals, both intracellular and extracellular vacuoles in the mesenteric lymph nodes. Animals fed mineral oil for a considerable length of time showed pathologic changes in the liver consisting of vacuolated cells and extracellular vacuoles. Examinations of the mesenteric lymph nodes of selected human autopsy material revealed the same type of vacuoles which did not reduce osmic acid and stained yellow by the Carmichael method. From the mesenteric lymph nodes of both human beings and experimental animals an unsaponifiable oil could be obtained which did not absorb hydrogen and which had an index of refraction and specific gravity of liquid petrolatum. Frazer, Stewart and Schulman<sup>9</sup> in 1942 reported that considerable absorption of liquid petrolatum from the intestine can occur if the oil is emulsified. When the droplets of oil were approximately 0.5 micron in diameter they could be observed in the cells of the intestinal wall of the rat. By means of the chylomicrographic method it was possible to demonstrate oily particles in the blood. Absorption was as high as 60 per cent, which these authors point out compares favorably with the absorption of olive oil when similarly tested.

The evidence thus is conclusive that liquid petrolatum can be absorbed in small amounts from the intestine. Further study is needed of the extent and significance of lesions of the liver and other organs that may be produced by long continued ingestion of mineral oil. It appears, however, that there is no real basis for any belief that mineral oil has any carcinogenic effect.

**Effect on Carotene and Vitamin A**—As a result of a great deal of investigation especially by Curtis and his collaborators<sup>10</sup> there now has been obtained a quantitative appreciation of the influence of mineral oil on the absorption of carotene. Curtis<sup>11</sup> has calculated that each ounce of mineral oil at body temperature is able to dissolve 140,000 international units of carotene and, at room temperature 120,000 international units. The magnitude of these figures explains the profound effect exerted by mineral oil, and the difference in the solubility at

6 Randolph N. A. On the Behavior of Petrolatum in the Digestive Tract. *Proc. Acad. Nat. Sc.* p. 281 (Nov-Dec) 1884 published in 1885.

7 Channon H. J. and Collinson G. A. The Unsaponifiable Fraction of Liver Oils. V. The Absorption of Liquid Paraffin from the Alimentary Tract in the Rat and the Pig. *Biochem. J.* 23: 676 (No. 4) 1929.

8 Stryker W. A. Absorption of Liquid Petrolatum (Mineral Oil) from the Intestine. A Histologic and Chemical Study. *Arch. Path.* 31: 670 (June) 1941.

9 Frazer A. C. Stewart H. C. and Schulman J. H. Emulsification and Absorption of Fats and Paraffins in the Intestine. *Nature* 149: 167 (Feb. 7) 1942.

10 Curtis A. C. and Kline E. M. Influence of Liquid Petrolatum on the Blood Content of Carotene in Human Beings. *Arch. Int. Med.* 63: 54 (Jan) 1939. Curtis A. C. and Ballmer R. S. The Prevention of Carotene Absorption by Liquid Petrolatum. *J. A. M. A.* 113: 1785 (Nov 11) 1939. Curtis A. C. and Horton Priscilla B. The Utilization of Vitamin A Added to Mineral Oil. *Am. J. M. Sc.* 200: 102 (July) 1940.

11 Curtis A. C. The Mineral Oil Vitamin A Problem. *Virginia M. Monthly* 69: 235 (May) 1942.

1 Dutcher R. A., Ely J. O. and Honeywell, H. E. Vitamin Studies. XV. Assimilation of Vitamins A and D in Presence of Mineral Oil. *Proc. Soc. Exper. Biol. & Med.* 24: 953 (June) 1927.

2 Burrows M. T. and Farr Wanda K. The Action of Mineral Oil per Os on the Organism. *Proc. Soc. Exper. Biol. & Med.* 24: 719 (April) 1927.

3 Mineral Oil in Foods: a report of the Council on Foods. *J. A. M. A.* 109: 1814 (Nov. 27) 1937.

4 Liquid Petrolatum or Russian Mineral Oil: a report of the Council on Pharmacy and Chemistry. *J. A. M. A.* 62: 1740 (May 30) 1914.

5 Logan V. W. Mineral Oil as a Laxative. *Hygeia* 20: 20 (Jan) 1942.

body and room temperatures explains the experimental observation that mineral oil continues to exert its deleterious effect even when it has been saturated at room temperature with carotene. The diet ordinarily provides each day from 5,000 to 10,000 international units of vitamin A and, with the normal choice of foods in the United States, about two thirds of the total is contributed by the carotene of plant foods. Animal food sources of vitamin A are relatively few, being restricted to milk and other dairy products containing butterfat, egg yolk, beef fat, liver and fish liver oils. Helen S. Mitchell<sup>12</sup> reported about ten years ago that rats need from ten to twelve times more squalene to supply their vitamin A requirement when the squalene is fed with 0.5 cc of mineral oil, and eight times as much when the mineral oil and the food are fed six hours apart. Observations such as these emphasize the undesirability of incorporating mineral oil in foods.<sup>13</sup>

Although liquid petrolatum has a profound adverse effect on the absorption of carotene, its effect on vitamin A itself is much less because vitamin A has a lower solubility in mineral oil than carotene. For this reason Curtis<sup>14</sup> has suggested that, whenever mineral oil is the cathartic of choice and is to be used for any period of time longer than a month, there should be administered with it 1 or 2 teaspoons of cod liver oil or its equivalent of other fish liver oil. "This is like borrowing from Peter to pay Paul," he has written, "but nevertheless it answers the problem of carotene loss to mineral oil." But vitamin A is not the only dietary essential whose assimilation may be adversely affected by the ingestion of mineral oil, and taking cod liver oil with mineral oil or saturating mineral oil with some form of vitamin A may actually lead to a false sense of security.

Constipation frequently occurs in pregnant women and in persons on restricted diets, and these are the very people who, because of the difficulty of meeting their dietary requirements with foods, should use mineral oil as a laxative understandingly or not at all. Hirst and Shoemaker<sup>14</sup> concluded as a result of their observations on 328 pregnant women under good antepartum dietetic management that "dietetic insufficiency in pregnancy should be assumed, and artificial vitamin A supplement offered in all cases." Some indication of the frequency with which mineral oil is used in conjunction with therapeutic diets is provided in the reports of cooperative investigations of the American Dietetic Association. Thus Johnson<sup>15</sup> has written that mineral oil was used in five of fifteen of the 1,500 calorie diets reported, in eleven of twenty-six of the 1,200 calorie diets and in six of twenty-one and six of thirty-eight of the 800 calorie and the low fat diets, respectively. These reports of diets were obtained from thirty-six hospitals in widely separated sections of the United States. While the vitamin A values for all these diets were considered satisfactory, if mineral oil was not consumed, it was emphasized that nearly all of the vitamin A was due to carotene, and the actual vitamin A content of the diets was extremely low unless 3 ounces or more of liver was included in the diets at least once a week.

**Vitamin D, Calcium and Phosphorus**—In 1940 Smith and Spector<sup>16</sup> reported their studies on the effect of the ingestion of mineral oil on the utilization of vitamin D. Even though the vitamin D was fed separately as cod liver oil, it was found that three times as much was needed to heal rickets in rats

when the basal diet contained 5 per cent mineral oil. When the basal ration contained 10 per cent of mineral oil from five to ten times more cod liver oil was needed to heal rickets. These investigators also demonstrated with growing puppies that the ingestion of mineral oil interferes with the retention of calcium and phosphorus. It was found also that puppies reared on a diet which contained 10 per cent of mineral oil with adequate amounts of calcium and phosphorus did not show normal calcification of the bones even when the amount of cod liver oil administered was increased as much as fivefold.

**Vitamin K**—The effect of mineral oil on vitamin K was studied by Elliott, Isaacs and Ivy<sup>17</sup>. A large number of rats were fed on a stock ration to which had been added 20 per cent of mineral oil by weight. Prothrombin deficiency, as measured by the Quick prothrombin time method, developed in the blood, and the condition was cured by the subcutaneous administration of a vitamin K preparation. It was the opinion of these investigators that the mineral oil interfered with the absorption of vitamin K. Hepatic injury was not ruled out but was considered to be unlikely.

The foregoing observations of Ivy and his collaborators received support and elaboration from the studies of Javert and Macri<sup>18</sup>. While investigating the prothrombin concentration during normal pregnancy they found in one woman a lowering of the prothrombin values below normal, and this condition was not improved by the administration orally of a vitamin K preparation. Intramuscular injections were effective. It was learned that this woman had been taking mineral oil during the course of her pregnancy. When the mineral oil was discontinued while the administration of vitamin K was continued, the prothrombin values increased to normal. However, at parturition the prothrombin of the cord blood was only one-third normal despite the administration of large amounts of vitamin K to the mother. Detailed studies then were made of 9 women who were found to be taking mineral oil intermittently during pregnancy. Of these women 3 had low prothrombin values. Of 10 other pregnant women taking mineral oil daily, 7 were found to have hypoprothrombinemia. The authors believed that the mineral oil produced its effect either through adsorption or the prevention of absorption of the vitamin K, or possibly through interference with bacterial synthesis. Their observation that the oral administration of vitamin K may be of little or no value if mineral oil also is being given is worthy of emphasis and serious thought.

#### MEDICAL OPINION REGARDING MINERAL OIL

Conflicting views are recorded regarding the effect of mineral oil per se on the alimentary tract. Many physicians consider mineral oil preparations the laxative of choice. It is probable that under medical supervision mineral oil can be properly used, but the ease of obtaining the preparations as well as other laxative drugs readily leads to abuse. Proctologists have experienced difficulty in visualizing the wall of the rectum because of an adhering film of oil in persons who take liquid petrolatum. The seepage of mineral oil is well known to be one of the discomforts that may attend the use of this substance. Morgan<sup>19</sup> has written forcefully about the need of caution in the use of liquid petrolatum. He has mentioned a syndrome to which he has ascribed the term "mineral oil poisoning" which may result from the continual oral administration of liquid petrolatum and which is relieved by discontinuance of the oil together with supportive measures to overcome the weakness which accompanies this syndrome. The most frequent signs and symptoms are anorexia, indigestion, flatulence, fatigue, nervousness, dyschezia and anal leakage, accompanied in many cases by considerable loss of weight. On the basis of reports such as these there can be no justification for the incorporation of liquid petrolatum in foods.

#### CONCLUSIONS

It has been shown that the ingestion of liquid petrolatum is capable of interfering seriously with the absorption of carotene, vitamin D, calcium and phosphorus and vitamin K. The effects

<sup>12</sup> Mitchell, Helen S. Influence of Mineral Oil on Assimilation of Vitamin A from Spinach, *Proc Soc Exper Biol & Med* 31: 231 (Nov) 1933.

<sup>13</sup> Rowntree, Jennie I. The Effect of the Use of Mineral Oil on the Absorption of Vitamin A, *J Nutrition* 3: 345 (Jan) 1931. Jackson, R. W. The Effect of Mineral Oil Administration on the Nutritional Economy of Fat Soluble Vitamins. II. Studies with the Vitamin A Factor of Yellow Corn, *ibid* 4: 171 (July) 1931. Dutcher, R. A., Harris, P. L., Hartzler, Eva R., and Guerrent, N. B. Vitamin Studies. XIX. The Assimilation of Carotene and Vitamin A in the Presence of Mineral Oil, *ibid* 8: 269 (Sept) 1934. With, T. K. Om Paraffinoleins harnkende Virkning paa Vitamin A Aktive Substansen Udnnyttning, *Nord med* 3: 2468 (Aug 12) 1939. Andersen, Oluf, Untersuchungen über die Wirkung von Paraffinoleingabe auf die Resorption des A Vitamins bei Menschen, *Klin Wchnschr* 18: 499 (April 8) 1939. With, T. K. On the Inhibitory Effect of Liquid Petrolatum on the Utilization of Vitamin A Active Substances, *Ztschr f Vitaminforsch* 10: 1, 1940.

<sup>14</sup> Hirst, J. C., and Shoemaker, R. E. Vitamin A in Pregnancy. II. Comparison of Dark Adaptation and Serum Tests, *Am J Obst & Gynec* 12: 404 (Sept) 1941.

<sup>15</sup> Johnson, Doris. Vitamin A versus Carotene Content of Low Fat Diets in Obesity Cholecystitis and Liver Disease, *J Am Dietet A* 18: 725 (Nov) 1942.

<sup>16</sup> Smith, Margaret C., and Spector, Harry. Calcium and Phosphorus Metabolism in Rats and Dogs as Influenced by the Ingestion of Mineral Oil, *J Nutrition* 20: 19 (July) 1940.

<sup>17</sup> Elliott, Margaret C. Isaacs, Bertha and Ivy, A. C. Production of "Prothrombin Deficiency and Response to Vitamins A, D and K, *Proc. Soc Exper Biol & Med* 43: 240 (Feb) 1940.

<sup>18</sup> Javert, C. T., and Macri, Cesira. Prothrombin Concentration and Mineral Oil, *Am J Obst. & Gynec* 42: 409 (Sept) 1941.

<sup>19</sup> Morgan, J. W. Harmful Effects of Mineral Oil (Liquid Petrolatum) Purgatives, *J A M A* 117: 1335 (Oct. 18) 1941.

of its prolonged use have not been thoroughly investigated, but there is sufficient evidence of possible harmful effects to justify the conclusion that its indiscriminate use in foods or in cooking is not in the interests of good nutrition, and any such use should be under careful supervision of a physician.

The Council previously has accepted, with a special requirement that the products be promoted for use only under the direction of a physician, salad dressing or imitation mayonnaise containing mineral oil, for use in therapeutic diets. In view of the abuses which have developed through the production and sale of food products containing mineral oil to the public, the impracticability of providing suitable and adequate warning of the possible harmfulness of such preparations, and the fact that physicians wishing patents to use such products readily can supply directions for their preparation on a small scale from liquid petrolatum and other ingredients, the Council has voted, on the basis of the evidence reviewed in the present report, to withdraw its acceptance of these products.

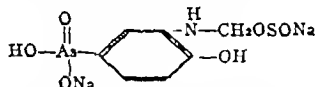
## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS COMFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

**ALDARSONE**—Aldarsone consists chiefly of the sodium salt of the pentavalent arsenical compound 3-N-methanal sulfoxylic acid-amino-4-hydroxy phenylarsonic acid, admixed with minor amounts of sodium chloride and sodium bicarbonate incidental to its manufacture. It contains from 17.0 to 18.5 per cent of arsenic. The probable structural formula of the arsenical compound may be indicated as follows:



**Actions and Uses**—Aldarsone, a pentavalent arsenical, may be used in the treatment of *Trichomonas vaginalis* vaginitis and central nervous system syphilis. While this agent probably possesses comparatively low toxic properties, because of its arsenical nature the physician should be on guard against untoward reactions. Such reactions include dermal and hemopoietic changes, nutritive reactions. Since aldarsone is a pentavalent arsenic compound, every care should be exercised and visual and color field examinations made prior to drug therapy so that contraction of visual field or symptoms of blurring may be observed.

**Dosage**—For the treatment of central nervous system syphilis 1 Gm of aldarsone dissolved in 10 cc. of sterile distilled water, administered intravenously once a week. The injections may be given continuously for periods of forty to fifty weeks. Concurrent bismuth therapy may be employed during a portion of the course of aldarsone injection. Aldarsone may be given as a supplement to fever therapy in the treatment of various forms of central nervous system syphilis.

For the treatment of *Trichomonas vaginalis*, aldarsone may be administered by insufflation of the powder (with kaolin) and in the form of a suppository. For insufflation the vaginal tract and external os of the cervix are thoroughly cleansed and dried, then the contents of a 3 Gm vial of aldarsone with kaolin are introduced by an insufflator. A cautionary statement is issued on the use of positive pressure in the pregnant female when insufflation is employed. The escape of air from the vagina should be permitted during compressions in case the patient is pregnant. The patient is treated for three consecutive days. Then additional treatments are given at three day intervals. No douche should be taken during the treatment.

Aldarsone suppositories may be used in conjunction with insufflation. They offer a way of providing aldarsone between insufflation treatments. Suppository treatment is started no sooner than twenty-four hours after the last powder treatment. One is inserted every second or third night until the patient reports for the next insufflation treatment. They may also be used alone by insertion of one suppository every third or fourth night for not more than three weeks. The patient should be warned against prolonged use of this treatment without the advice of a physician, since an arsenical is being employed.

Suppositories alone should not be expected to produce permanent results merely to lessen the discharge and diminish symptoms.

#### Tests and Standards—

Aldarsone occurs as a white odorless, amorphous powder. It is soluble in water dilute acids alkalis and alkali carbonates, slightly soluble in methyl alcohol and insoluble in ether and ethyl alcohol. The pH of a 5 per cent solution is from 7.0 to 7.4.

Add 0.2 Gm of sodium hydrosulfite to about 0.1 Gm of aldarsone dissolved in 5 cc. of water and warm at 50-60°C for five minutes. A yellow solution is produced, add normal hydrochloric acid dropwise to the solution. A lemon yellow gelatinous precipitate forms soluble in excess hydrochloric acid. Add 1 cc of iodine solution and 2 cc. of chloroform to 10 cc. of a 1 per cent solution of aldarsone. Shake the test tube and contents and then allow the liquids to separate. No color appears in either of the liquid layers. Repeat the test, first adding 0.25 Gm of sodium bicarbonate. No color appears in the chloroform layer but the aqueous layer is colored light brown. Add 2 cc. of diluted nitric acid and 1 cc. of silver nitrate solution to 5 cc. of a 1 per cent solution of aldarsone. A black precipitate forms, heat to boiling and cool. The mixture rapidly changes to a yellow brown solution containing a white precipitate. Decant the solution. The precipitate is soluble in excess ammonia. Add 3 drops of alkaline potassium mercuric iodide solution to 5 cc. of a 1 per cent solution of aldarsone. A gray to black precipitate of metallic mercury is formed (distinction from acetarsone, tryarsamide and other pentavalent arsenicals).

Dissolve 0.1 Gm of aldarsone in 5 cc. of water, add 0.5 cc. of 10 per cent sodium nitrite solution, cool in ice water and add 0.1 cc. of 10 per cent hydrochloric acid followed by 0.1 cc. of a solution containing 5 per cent betanaphthol and 10 per cent sodium hydroxide. No red color is produced on standing (absence of 3-amino-4-hydroxyphenylarsonic acid).

Dissolve 0.5 Gm of aldarsone in 10 cc. of water, add 1 cc. of diluted ammonia water and 1 cc. of magnesia mixture. No precipitate forms (absence of inorganic arsenate). Heat the solution to boiling. A white precipitate forms slowly.

Dry an accurately weighed 1 Gm portion of aldarsone contained in a weighing bottle not less than 20 mm diameter over fresh phosphorus pentoxide for twenty-four hours in a vacuum of at least 5 mm of mercury. The loss in weight is not more than 3.0 per cent. Transfer about 0.5 Gm of aldarsone accurately weighed to a tared porcelain dish, add 0.5 cc. of sulfuric acid and gently ignite. Cool, treat the ash with 5 drops of sulfuric acid and 5 drops of hydrochloric acid. Evaporate the acids over a low flame and then ignite, cool and weigh. The weight of the sulfated residue is equivalent to a sodium content of not less than 15.2 per cent nor more than 16.2 per cent. The residue responds to tests for sodium.

Dissolve about 0.5 Gm of aldarsone accurately weighed, in 25 cc. of water, add 10 cc. of silver nitrate solution and 10 cc. of nitric acid. Warm on a steam bath for fifteen minutes and finally add 100 cc. of water. Continue the digestion on the steam bath for thirty minutes, cool, allow to stand thirty minutes and collect the precipitated silver chloride on a suitable tared sintered glass filter (or Gooch crucible). Wash the precipitate and dry at 100°C for one hour. The weight of silver chloride found is equivalent to a chlorine content of not less than 6.5 per cent nor more than 7.5 per cent.

Dissolve about 0.5 Gm of aldarsone in 10 cc. of water contained in a 400 cc beaker and add a solution made by dissolving carefully 5 Gm. of sodium peroxide in 25 cc. of water. Cover the beaker with a watch glass and heat on a steam bath for one hour. Cool, add hydrochloric acid down the side of the beaker with stirring until the solution is colorless and then add 1 cc. in excess. Add 25 cc. of water and boil the solution gently covering the beaker with a watch glass until the volume is reduced by one half. Dilute to approximately 300 cc with water, boil and add 15 cc. of barium chloride solution dropwise at first until a precipitate forms. Digest the mixture for one hour on the steam bath and filter while hot, collecting the precipitated barium sulfate on a suitable tared previously ignited Gooch crucible. Wash the precipitate with hot water until chlorides are absent from the washings. Dry the crucible and contents at 100°C for fifteen minutes and finally ignite at 650°C for fifteen minutes. The weight of barium sulfate formed is equivalent to a sulfur content of not less than 6.5 per cent nor more than 7.5 per cent.

Transfer about 0.5 Gm of aldarsone accurately weighed to a 250 cc. wide mouthed Erlenmeyer flask, add 10 cc. of water to dissolve the sample taken and then add 15 cc. of 30 per cent hydrogen peroxide. Mix and add 10 cc. of sulfuric acid slowly down the side of the flask shaking the mixture after each addition. Place a short stemmed funnel in the top of the flask and heat at medium temperature until the reaction subsides. Remove the funnel and heat for twenty minutes at a temperature such as to produce sulfur trioxide fumes freely. (If at the end of five minutes the solution is not colorless cool and add from 2 to 5 cc. of 30 per cent hydrogen peroxide then continue to heat as before.) Cool and add through a long stemmed funnel 0.2 Gm of hydrazine sulfate (chlorine free). (Care should be taken to prevent adherence of hydrazine sulfate to the wall of the flask.) Heat the acid solution to dissolve any crystals of hydrazine sulfate and then maintain heat sufficient to produce fumes of sulfur trioxide which show a partial condensation point about 2 inches from the top of the flask for twenty minutes. Cool dilute (carefully) with 20 cc. of distilled water, add from 3 to 5 drops of a methyl orange solution (3 cc. of methyl orange test solution diluted to 100 cc. with water) and titrate while hot with tenth normal potassium bromate solution until the solution becomes colorless. Near the end point the potassium bromate solution should be added dropwise. Each 1 cc. of tenth normal potassium bromate is equivalent to 0.003746 Gm. of arsenic. The amount of arsenic found is not less than 17.0 per cent nor more than 18.5 per cent.

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**Aldarsone with Kaolin** 30 Gm. Each 30 Gm contains aldarsone 0.5 Gm. and kaolin 2.5 Gm. packaged in glass tubes suitable for use with insufflator.

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SATURDAY, DECEMBER 11, 1943

## GEOGRAPHY AND THE ETIOLOGY OF CANCER

Geographic differences in the total incidence and in the types of cancer are gradually becoming more and more apparent. The factors which cause cancer can be divided into those that are hereditary and those that are environmental. Research would be simplified if one group could be ignored and all efforts concentrated on the other, or if they could be separated. In a previous editorial<sup>1</sup> the point was made that while a hereditary factor is accepted as etiologically important in a few uncommon types of tumors its role, if any, is not known in the major, common types of cancer in man.

Studies on the geographic distribution of the total incidence and of the types of cancer can under certain conditions separate the hereditary from environmental factors and help decide their relative importance. The role of hereditary factors can be determined by the study of races, especially pure races, by comparing them with one another and also by studying a relatively pure race under different environments. The environmental factors can be evaluated by studies of a race under different environmental conditions. These include dietary and social customs, climate, sunshine, temperature, altitude and other factors.

The relationships of geography and race to cancer are especially intriguing. If real geographic differences in cancer are found to exist, they must be due to either hereditary or environmental factors. If, in the same environment, different races show different incidences and types of cancer, then hereditary influences are probably operating. It further geographic comparisons reveal that the same racial group living in different environments has different amounts and kinds of cancer, then the etiologic factors must be environmental. If the tumor incidence of races after migration remains

the same as that in the homeland, despite changes in the environment, then hereditary explanation must be sought.

The incidence of cancer in all parts of the world should be studied. In each locality the incidence should be determined separately for each racial group. The incidence of tumors in members of races which have migrated into dissimilar environments could then be compared with one another and with that of the mother country. The tumor incidence of races that have migrated but retained their traditional dietary and other customs could be compared with other emigrants of the same race who have adopted new customs.

Thus it is important to know the tumor incidence of Europeans, Asiatics, Africans, Americans and peoples of the islands not only in their normal localities but also after migration to other parts of the world. How does cancer in Chinese living in China compare with that of Chinese living in San Francisco and Singapore? Do Germans in Brazil have the same amount and types of cancer as Germans in Germany or Milwaukee? What happens to the incidence of cancer when the African Negro migrates to the West Indies, New Orleans and Harlem?

Fortunately a source of information exists which, up to now, has been almost untapped. Scattered over the world are first class medical schools. Each of them has a department of pathology which through its members supplies expert pathologic services to affiliated teaching hospitals. Since these are hospitals giving general instruction to medical students they usually accommodate all types of disease. Thus they tend to represent a fairly accurate cross section of the diseases in that locality. The accuracy of diagnosis of the common types of tumors at necropsy is approximately the same in these various medical centers. The principal differences in their necropsy populations are in their racial origins and in some environmental factors. Other differences exist, such as average age, sex ratio, social background and selective concentrations of certain diseases due to the special interests of the clinical staffs, but these can be recognized and subjected to correction factors. Here then lies a great wealth of data already accumulated but unreported or easily obtainable.

Other sources of data which could be used for the solution of the same problems are the necropsy records of nonteaching hospitals with large pathologic services, departments of surgical pathology and the vital statistics. Probably none of these have the same degree of uniformity and reliability over the world as is possessed by the former. For the solution of some problems, however, they are adequate and even superior.

Scientists over the world should report their data. When this is done, all peculiarities of the hospital and

<sup>1</sup> Heredity of Cancer in Man, editorial, J. A. M. A. 122: 677 (July 3) 1943.

necropsy population should be stated. The total cancer mortality should be given as well as the relative proportions of the different kinds of cancer. The social background, age, sex, racial origins and other factors should be included. A statement should be made as to how well the necropsy population represents the composition of the population as a whole. If successful treatment has reduced the necropsy incidence of some types of tumors materially, this should be stated. These and other data should be given so that they can be compared with those from other parts of the world.

From the vantage of one set of data and one locality, little of an etiologic nature may be apparent. Studied together these data may form an important picture and yield valuable knowledge to help conquer human cancer. From the funds available for the study of cancer, such a project as is here suggested may be easily financed. There is required only the leadership and organization. The international attitudes of the postwar world will no doubt make such studies most desirable.

#### ABSORPTION AND EXCRETION OF RADIOACTIVE ZINC AND IRON

Among the contributions to our knowledge of metabolism resulting from studies of radioactive chemical elements, few are of greater clinical interest than determination of the method of elimination of zinc and of the gastrointestinal absorption of iron reported by Montgomery and his colleagues<sup>1</sup> of the University of California and by Hahn and his co-workers<sup>2</sup> of the University of Rochester.

In 1927 Drinker<sup>3</sup> found that in cats long continued ingestion of zinc leads to fibrotic changes in the acinar portions of the pancreas, the islet tissues remaining unchanged. This suggested that the acinar portion of the pancreas is concerned in the metabolism of zinc. The increased use of protamine zinc insulin gave special interest to this observation. Montgomery studied the fate of intravenously injected radiozinc ( $Zn^{65}$ ) in dogs with biliary, duodenal and pancreatic fistulas. The injected dose was usually 1 microgram per kilogram of body weight, an amount which did not materially increase the previously existing zinc concentration in the animal.

Assays of the labeled zinc in the tissues and excretions of these animals showed that the tissues in which the highest concentration of radiozinc appeared were the liver and the pancreas. The maximum deposition was observed eight hours after intravenous injection, at which time the liver contained approximately 0.34 per cent of the injected dose per gram of tissue and

the pancreas 0.28 per cent. The pancreas as a whole then contained 3.1 per cent of the intravenously injected radiozinc, decreasing to 0.7 per cent by the end of seven days. Assays of the bile, duodenal secretions and pancreatic juice revealed that hardly any zinc is excreted in the bile. Relatively large amounts of zinc, however, were detected in the pancreatic juice, as much as 11 per cent of the intravenously injected dose being recovered from this juice by the end of fourteen days. Zinc was also found in large amounts in the secretions obtained from the isolated duodenal loop.

From these and other data the California physiologists concluded that there is presumably a protein, enzyme or other specific receptor in the acinar cells of the pancreas (and in the duodenal mucosa) which brings about the elective localization of zinc in this organ and its subsequent release into the pancreatic juice (and duodenal secretions).

In their earlier studies of radioactive iron ( $Fe^{59}$ ) Sheline and his co-workers<sup>4</sup> found hardly any absorption of radioiron through the normal canine gastrointestinal mucosa. Abundant absorption of iron, however, was noted in certain anemic dogs. From this he concluded that the gastrointestinal mucosa has a dual function: (a) protecting the body against absorption of excessive iron, which might prove toxic, and (b) making possible adequate iron absorption in case of physiologic needs.

To determine the mechanism of this regulated absorption, from 1 to 10 mg per kilogram of body weight of radioiron was fed to normal and to anemic dogs and the absorption determined by radioanalysis of the whole blood. In one series of dogs the normal control animals absorbed about 1 per cent of the ingested dose of labeled iron. In dogs rendered acutely anemic by massive bleeding (plus plasma returned) the absorption was not materially increased during the first twenty-four hours. Two weeks later, however, after much blood regeneration had occurred, the normal rate of absorption was increased tenfold. Acute anemia per se is apparently not the determining factor that increases normal absorption. Increased absorption presumably is the response to the later depletion of the reserve iron in fixed tissue cells.

Ordinary iron given to chronic anemic dogs by the intravenous route from one to six hours before the test dose of radioiron is administered does not appreciably decrease the anticipated excessive intake of ingested radioiron. Ordinary iron given by mouth, however, reduces the subsequent absorption of ingested labeled iron. Iron absorption through the gastrointestinal mucosa is therefore presumably "blocked" as a result of the preliminary dose of natural iron, blockade of the more distant liver, spleen or bone marrow cells being

<sup>1</sup> Montgomery, M. L., Sheline, G. E. and Chaikoff, I. L. *J. Exper. Med.* 78: 151 (Sept.) 1943.

<sup>2</sup> Hahn, P. E., Bale, W. F., Ross, J. F., Balfour, W. M. and Whipple, G. H. *J. Exper. Med.* 78: 169 (Sept.) 1943.

<sup>3</sup> Drinker, K. R., Thompson, Phebe K. and Marsh, M. *Am. J. Physiol.* 80: 31 (March) 1927.

<sup>4</sup> Sheline, G. E., Chaikoff, I. L., Jones, H. B. and Montgomery, M. L. *J. Biol. Chem.* 147: 409 (Feb.) 149: 139 (July) 1943.



ineffective Local "mucosa block" was also demonstrated in isolated gastric, duodenal and jejunal pouches

To account for this blockade, Hahn postulates the existence of an enzyme or protein in the gastrointestinal mucosa capable of combining lightly and reversibly with iron Fully saturated, this specific iron "acceptor" would refuse to absorb additional iron Partially depleted, the ferroacceptor would take up additional iron from the gastrointestinal contents Hahn believes that this hypothetical iron "acceptor" is similar to the splenic "ferritin" or "apoferritin" discovered in 1937 by Laufberger<sup>5</sup> of Czechoslovakia Over 20 per cent of the dry weight of splenic ferritin is iron It can be readily changed in the test tube to iron free apoferritin without demonstrable alteration of its crystalline properties Iron is presumably loosely held in the interstices of the ferritin molecule, from which it can be removed without altering the surface structure of the molecule Granick<sup>6</sup> found that there is a 90 per cent decrease in the amount of splenic ferritin in chronic anemic horses, though the anticipated anemic increase in splenic apoferritin was not demonstrated

The suggested theory of zinc excretion and iron absorption is of biologic interest The side chain or specific receptor theory assumed a basic role in the development of nutritional and immunologic theory, this served a useful purpose Determination of the function and properties of the hypothetical specific zinc receptor of the pancreas and the presumptive specific iron "acceptor" in the gastrointestinal mucosa may well cause a renaissance of this theory

### SUBARACHNOID HEMORRHAGE

Most forms of cerebral hemorrhage occur in the later years of life or in persons whose cerebral blood vessels have been damaged by sclerosis, tumors or intercurrent infection The condition commonly called spontaneous subarachnoid hemorrhage, however, appears frequently in youth and in early middle age and is usually difficult to associate with any precipitating influence In this condition massive extravasation of blood into the subarachnoid space follows spontaneous rupture of a blood vessel Hemorrhages into the same space resulting from extension of intracerebral bleeding, minor bleeding in the course of systemic infections, blood diseases or hemorrhages occurring during agonal episodes are excluded The underlying causes of this condition are uncertain Strauss and his co-workers<sup>1</sup> state that the common anatomic changes are arteriosclerosis of the cerebral blood vessels with or without frank aneurysmal defects Inflammatory lesions of the blood vessels, they say,

may also cause formation of aneurysms with ultimate rupture and hemorrhage According to Glynn<sup>2</sup> the greater frequency with which aneurysms occur in the circle of Willis rather than in other muscular arteries is probably due to differences in their elastic tissue Fetterman and Moran<sup>3</sup> found that arterial circles of the type usually described as "normal" were present in less than half of their series of over 200 brains About a fourth showed interruptive anomalies involving the posterior communicating branches alone

The available information on 150 cases of subarachnoid hemorrhage, almost all in the armed services, has been recently reviewed by Magee<sup>4</sup> Because of the source, the cases are presumably confined to men and to comparatively early age groups Magee could not find any reliable premonitory sign of aneurysm or its rupture Headache of migrainous type, however, in young persons in whom a relevant family history cannot be obtained should arouse suspicion, a concurrent ocular palsy would be of further value and should lead to roentgenologic examination In most cases the symptoms appear suddenly and the victim becomes stricken without premonitory warning In the majority of cases violent headache is the most important presenting symptom This usually is accompanied by moderate pyrexia, vomiting and rigidity of the neck, which in many instances results in the false suspicion of meningitis Vascular hypertension was rarely found in Magee's series, positive serologic reactions for syphilis were not obtained in any cases

The primary object of these investigations was to determine the relation, if any, of physical strain to subarachnoid bleeding and to rupture of aneurysms of the circle of Willis Strain has sometimes been advanced to explain the departure from the ordinary age and physical condition of those sustaining this type of cerebral hemorrhage The analysis did not reveal any evidence, however, that physical effort or strain acts as an etiologic factor

The gravity of subarachnoid hemorrhage is well known, in Magee's series the mortality rate was 56 per cent In his series of 150 patients 105 either died or were seriously crippled by paralytic sequels, incapacitating headache or vertigo A second hemorrhage occurred in 50 of the 150 patients, and this represents an even more grave prognosis when it is realized that 52 of the 150 died in the primary attack The 50 recurrences therefore occurred among the 98 survivors of the first attack The prospects of good recovery diminished with advancing years, few of those examined subsequently to an attack were entirely free from symptoms Necropsy in 58 of the 84 fatal cases

<sup>2</sup> Glynn, L. E. Medial Defects in the Circle of Willis and Their Relation to Aneurysm Formation, *J. Path. & Bact.* 51: 213 (Sept) 1940

<sup>3</sup> Fetterman, G. H., and Moran, T. H. Anomalies of the Circle of Willis in Relation to Cerebral Softening, *Arch. Path.* 32: 251 (Aug) 1941

<sup>4</sup> Magee, C. G. Spontaneous Subarachnoid Hemorrhage *Lancet* 2: 497 (Oct 23) 1943

<sup>5</sup> Laufberger, Vilem *Bull. Soc. chim. biol.* 19: 1575, 1937

<sup>6</sup> Granick, S., and Michaelis, L. *Science* 95: 439 (April 24) 1942

<sup>1</sup> Strauss, Israel, Globus, J. H., and Ginsburg, S. W. Spontaneous Subarachnoid Hemorrhage, *Arch. Neurol. & Psychiat.* 27: 1080 (May) 1932

disclosed 43 ruptured aneurysms, these were more common in the anterior half of the circle and on the right side than on the left. The latter observation is the reverse of that commonly found in intracerebral hemorrhage of other varieties but its explanation is obscure.

The fundamental cause of subarachnoid hemorrhage according to present knowledge appears to lie in a congenital defect—perhaps minor—involving an anatomic area with lower margin of safety than most portions of the human body. If correct, this explanation might be substantiated in part from embryologic investigations which do not yet seem to have been applied to this problem in a decisive manner.

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## Current Comment

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### MINERAL OIL IN FOODS

Elsewhere in this issue (page 967) of *THE JOURNAL* appears a statement prepared by the Council on Foods and Nutrition relative to mineral oil (liquid petrolatum) in foods. Basically, salad dressings made with mineral oil cannot be differentiated, except in a laboratory, from ordinary products containing true fats or oils like olive oil. Such products are frequently bought in large amounts by hotels and restaurants. The person who receives a salad on which such a dressing has been placed has no idea as to the nature of the material that is being used. Mineral oil is plentiful, it can be purchased without ration points and can be sold much more cheaply than can olive oil or other vegetable oils. As will be observed from the report of the Council on Foods and Nutrition, however, there are also many other reasons why mineral oil should not be taken without a clear understanding of the nature of the substance. The ingestion of liquid petrolatum is capable of interfering seriously with the absorption of carotene, the precursor of vitamin A, with vitamin A itself, and also with vitamin D, calcium, phosphorus and vitamin K. The prolonged use of mineral oil may be associated with disturbances related to deficiencies of such vitamins. Proctologists report difficulty in visualizing the walls of the bowel because of a dark film of oil. Occasionally seepage occurs. Indeed, one writer has described a series of symptoms definitely related to continuous use of liquid petrolatum. Sometimes such products are sold in one to five gallon containers purchased largely by hotels and restaurants, since householders do not use such quantities. There are, for instance, a product called Thallon-Naise made in New York, a mayonnaise packed for H. L. Barker, Inc., New York, a mineral oil dressing made by J. H. Filbert Inc., Baltimore, a product called Slenderit manufactured by Marquis Products Company of Portland, Ore., and Beck's Pure U. S. P. Mineral Oil furnished by Beck's Mayonnaise Products of Davenport, Iowa, as well as others. Mineral oil is used in

the baking industry in the place of animal and vegetable oils. Certainly the consumer should have the right to know the nature of the substance that he is using and the possible harmful effects associated with the substitution of liquid petrolatum for what he considers to be a food.

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### THE EXPERIMENTAL PRODUCTION OF PERIARTERITIS NODOSA

Recent research indicates that certain etiologically obscure diseases may be dependent on an increased reactivity of tissue to foreign substances. This is notably and definitely so in the case of periarteritis nodosa, which has been ascribed to a great variety of possible causes. Diverse clinical observations pointing to a relationship between serum disease and periarteritis nodosa led Rich<sup>1</sup> to make experiments in the course of which typical lesions of periarteritis nodosa were produced in rabbits. Relatively large quantities of sterile horse serum were injected and after twelve days or so skin tests revealed hypersensitiveness to the serum. The intravenous introduction of 1 cc of horse serum a few days later was followed by the development of characteristic widely spread lesions of periarteritis nodosa, which in this case might be spoken of as a serum disease of the arteries or as a manifestation of a special arterial hypersensitiveness to horse serum. Probably other antigenic substances than those in horse serum may have similar effects on sensitized tissues, human or animal. Here lies a promising field for further experimentation. Rich and Gregory<sup>2</sup> mention interesting results with compounds of proteins with sulfonamides. For the present periarteritis may perhaps be regarded as a pattern of arterial reaction to antigenic substances rather than as a disease due to a single cause. The histories of patients with periarteritis nodosa should be studied thoroughly with respect to possible specific sensitizations, infectious or otherwise. In some of the rabbits in the experiments, acute glomerulonephritis was present. This naturally raises the question whether human glomerulonephritis, as well as other forms of acute nephritis, like the interstitial, may not be of the nature of reactions of hypersensitiveness—also a problem for experimental study. In reporting a remarkable instance of progressive, disseminated lupus erythematosus, fatal in four months, the first symptoms of which appeared one week after a prophylactic dose of antitetanic serum in a girl 17 years old, Fox<sup>3</sup> discusses at length the question whether this case may not have been a protracted form of serum disease. Fox stresses the need of clinical and experimental study of the relations of specific antigens to disseminated lupus erythematosus and of the effects of actinic rays on sensitized tissues.

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<sup>1</sup> Rich, A. R. The Role of Hypersensitivity in Periarteritis Nodosa. *Bull. Johns Hopkins Hosp.* 71: 123 (Sept.) 1942.

<sup>2</sup> Rich, A. R. and Gregory, J. E. Experimental Demonstration that Periarteritis Nodosa is Manifestation of Hypersensitivity. *Bull. Johns Hopkins Hosp.* 72: 65 (Feb.) 1943.

<sup>3</sup> Fox, R. A. Disseminated Lupus Erythematosus—An Allergic Disease. *Arch. Path.* 36: 311 (Sept.) 1943.

# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## ARMY

### SURGEON GENERAL KIRK ISSUES STATEMENT ON PENICILLIN

Because of numerous requests received by the army for penicillin, Surg Gen Norman T Kirk of the Army Medical Department explained on November 23 that the War Department "at no time has either controlled penicillin or received the entire output." The army's position with regard to penicillin supply is exactly the same as that of the Navy, U S Public Health Service and the Office of Scientific Research and Development, each of which receives a monthly allocation of penicillin from the War Production Board. General Kirk also explained that the penicillin allocated to the Army Medical Department is intended for the treatment of military personnel and none of it can be reallocated or released to civilians. This month according to the War Production Board, the Army will receive 50 per cent of the total supply, the Navy 18 per cent, the U S Public Health Service (for the treatment of Coast Guard and Merchant Marine personnel) 2 per cent, the Office of Scientific Research (for civilians) approximately 15 per cent and the scientific staffs of drug companies the remainder for their own research. Though production of the drug is steadily increasing, at present none of the agencies, including the military, receive as much as they need. Its distribution among military and naval personnel is determined by the army, navy and the public health service. Distribution of the part allocated to civilians is for clinical research and its assignment is determined by a committee headed by Dr Chester S Keefer, Francis Memorial Hospital, Boston. Since the amount of penicillin requested by civilians greatly exceeds the available supply, it has been determined by the Office of Scientific Research and Development that requests by civilians must be made through their doctors, who should communicate with Dr Keefer by telephone, telegram or personal letter, giving complete details of the case so that he may have an adequate basis for his decision.

### SPECIAL BOARD OF OFFICERS TO STUDY CLINICAL TREATMENT OF MALARIA

Major Gen Norman T Kirk, Surgeon General of the Army, has appointed a special board of officers to study the clinical treatment of malaria. Two hundred beds were ordered set aside for the purpose of the study in each of the following general hospitals: Bushnell (Brigham, Utah), Harmon (Longview, Texas), Kennedy (Memphis, Tenn) and Percy L Jones (Battle Creek, Mich). Major Gen Shelley U Marietta is the senior officer of the new board, and other members are Col George R Callender, Lieut Col Thomas T MacKie, Lieut Col Francis R Dicuaide and Major O R McCoy, all medical corps officers.

### LIEUT PHILIP G CREESE AWARDED SOLDIER'S MEDAL

The War Department announced on December 4 an award of the Soldier's Medal to Lieut Philip G Creese for "heroism displayed in rescuing an enlisted man from drowning. While he was participating in landing exercises on a beach in England a landing craft was swamped and a number of men were thrown into the surf. One man was carried offshore by the swell and in a few minutes was in a drowning condition. Lieutenant

Creese, without hesitation, plunged into the surf and brought the drowning soldier far enough toward shore for others to assist in the rescue." Dr Creese graduated from Harvard Medical School in 1942 and entered the service in March 1943.

### THE FOSTER GENERAL HOSPITAL

The Foster General Hospital, which was formally dedicated on September 18, is located in Jackson, Miss. The hospital is modern in every respect and is furnished with the finest medical and surgical equipment available. It has a semipermanent brick construction with a total bed capacity of 1,768. It maintains its own fire station, ambulance corps, engineering division, warehouses for medical supplies and hospital equipment and is set off into wards for treatment of enlisted personnel with a number of small rooms for officers. Operating rooms and dental clinics occupy a section of the hospital. In addition to the facilities for patients there are several large mess halls, an officers' club and quarters for officers, nurses, and enlisted men. At the present time this hospital has not been designated for any special medical work but is receiving routine general hospital cases from overseas theaters.

The Foster General Hospital was named for the late Col Charles L Foster, Mississippi army physician for many years.

Col Sam F Parker is commanding officer of the Foster General Hospital. The remaining personnel which staffs the hospital are:

Lieut. Col Edward J Doyle, executive officer	Capt Edward W Nelson, surgical service
Lieut. Col Marshall E Hyde, chief, medical service	Capt Fred L Norton, surgical service
Lieut. Col Edmund Horgan, chief, surgical service	Capt. Edward B Weinman, surgical service
Major Reubin R Pliskin, assistant chief, medical service	Capt. Samuel Soifer, chief, genito-urinary clinic
Major John M Cotton, chief, neuropsychiatry section	Capt Harry J Keys, post surgeon
Major George V Knowles, medical service	Capt. Leo G Glickman, assistant chief x ray service
Major James M Kinsman, medical service	1st Lieut Fay B Murphy, medical service
Major Samuel M Salley, medical service	1st Lieut John G Egger, medical service
Major Armand J Mauzey, surgical service	1st Lieut Alexander A Kreuger, medical service
Major Clair S Linton, chief, eye, ear, nose and throat clinic	1st Lieut. Horace T Greene, medical service
Major Saul Ritchie, chief, orthopedic section	1st Lieut Dale F Johnson, medical service
Major Joseph E Noll, chief, x ray service	1st Lieut Salo Vogel, medical service
Major Michael Brylawski, chief, laboratory service	1st Lieut Marvin W Latham, medical service
Capt Clarence L Miller, medical service	1st Lieut. Thomas J Ellis surgical service
Capt George H Butler, medical service	1st Lieut Ivey E Lamberth, anesthesiologist
Capt Otto Hitschmann, medical service	1st Lieut. Clifford W Losh Jr., surgical service
Capt Joseph G Cole, medical service	1st Lieut Harry J Mitchell Jr., surgical service
Capt Emanuel Sigoloff, medical service	1st Lieut Herbert P Swartz, medical service
Capt Arthur J Shapiro, medical service	1st Lieut Dionisus V Cacioppo, surgical service
Capt Conrad G Collins, assistant chief surgical service	1st Lieut George T Wohl, assistant post surgeon
Capt Ernest W Atkins, surgical service	1st Lieut Stanley F Boc laboratory service
Capt Gerold H Friedman, surgical service	1st Lieut Dewitt F Mullins Jr., laboratory service

GENERAL LULL DEDICATES WAR  
BOND BANNER

Major Gen George F Lull Deputy Surgeon General, dedicated the "Minute Man Banner awarded to civilian War Department employees of the Surgeon General's Liaison Office on duty at the headquarters of the American Medical Association, Chicago, November 9

In making the award of the banner which was authorized by the chief of finance, United States Army, General Lull commended the employees on their full participation and large subscriptions of war saving bonds. He said the record estab-

lished at the Surgeon General's Liaison Office exceeded that of some Washington offices, including the Office of the Surgeon General. All civilian employees on duty at the Liaison Office have authorized payroll deductions for war saving bonds amounting to 12 per cent of their gross earnings. Present at the dedication were Col Don G Hildrup, chief, Medical Branch, Sixth Service Command, Dr Adolph Runreich, senior surgeon, United States Public Health Service, liaison officer to the Sixth Service Command, U S Army, Dr Edwin P Jordan, assistant editor of THE JOURNAL, and Lieut Col Harold C Lueth, M C, liaison officer.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS,  
DENTISTS AND VETERINARIANSHOSPITALS NEEDING INTERNS  
AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their Procurement and Assignment Service quotas for Jan 1, 1944

(Continuation of list in THE JOURNAL December 4 p 912)

## COLORADO

Childrens Hospital Denver Capacity 215 admissions 5 238 Mr DeVoss Taliaferro Director (resident—pediatrics)  
National Jewish Hospital Denver Capacity 257 admissions 205 Dr Charles J Kaufman Medical Director (2 assistant residents—tuberculosis)

## CONNECTICUT

Danbury Hospital Danbury Capacity 235 admissions 3 541 Miss Anna M Griffin RN Superintendent (2 interns)

## GEORGIA

University Hospital Augusta Capacity 345 admissions 10 892 Dr William H Goodrich Medical Superintendent (4 interns)

## ILLINOIS

American Hospital Chicago Capacity 194 admissions 4 365 Dr Solomon Greenspan Medical Director (3 interns 2 residents)  
Chicago Memorial Hospital Chicago Capacity 108 admissions 2 713 Miss Josephine O Blalock Superintendent (1 intern)  
Englewood Hospital Chicago Capacity 157 admissions 6 232 Mr A R Zeiter Superintendent (3 interns)  
Manteno State Hospital Manteno Capacity 6 576 admissions 1 576 Mr Rodney H Brandon Superintendent (resident—psychiatry)  
St Francis Hospital Peoria Capacity 510 admissions 13 436 Sister M Ancilla RN Superintendent (1 intern)  
Rockford Municipal Tuberculosis Sanatorium Rockford Capacity 124 admissions 162 Dr William J Bryan Medical Director and Superintendent (resident—tuberculosis)

## KENTUCKY

Kosair Crippled Childrens Hospital Louisville Capacity 125 admissions 1 310 Miss Anna B Quinn Superintendent (resident—orthopedics)

## MAINE

Maine General Hospital Portland Capacity 329 admissions 7 079 Dr Stephen S Brown Medical Director (3 interns)

## MASSACHUSETTS

Grafton State Hospital North Grafton Capacity 1 750 admissions 254 Dr Harlan L Paine Medical Superintendent (resident—psychiatry)  
Shriners Hospital for Crippled Children Springfield Capacity 60 admissions 301 Miss Dorothy Forsythe RN Superintendent (resident—orthopedics)

## MICHIGAN

Leila A Post Montgomery Hospital Battle Creek Capacity 175 admissions 4 923 Sister M Constance Superintendent (resident—mixed)  
St Josephs Mercy Hospital Detroit Capacity 285 admissions 9 742 Sister Mary Camilla RN Superintendent (2 interns)  
Blodgett Memorial Hospital Grand Rapids Capacity 206 admissions 4 553 Mr William W Colton Director (resident—surgery)  
St Lawrence Hospital Lansing Capacity 230 admissions 11 041 Sister Mary Assisium Superintendent (3 interns)

## MINNESOTA

Fairview Hospital Minneapolis Capacity 192 admissions 5 255 Mr E. M Hauge Superintendent (assistant resident—mixed)  
Nopemung Sanatorium Nopemung Capacity 260 admissions 279 Dr C A Hedberg Medical Superintendent (resident—tuberculosis)

## NEBRASKA

Douglas County Hospital Omaha Capacity 408 admissions 2 781 Dr F J Wearne Medical Director (2 residents—mixed)

## NEW HAMPSHIRE

Elliot Hospital Manchester Capacity 154 admissions 2 567 Mrs Elizabeth M McKay RN Superintendent (resident—mixed)

## NEW JERSEY

West Jersey Homeopathic Hospital Camden Capacity 320 admissions 5 775 Mr F B Gail Manager (3 interns)  
East Orange General Hospital East Orange Capacity 150 admissions 4 266 Mr Charles Lee Superintendent (3 interns)  
St. Elizabeth Hospital Elizabeth Capacity 266 admissions 4 757 Sister Alice Regina Superintendent (3 interns)  
Christ Hospital Jersey City Capacity 206 admissions 5 710 Mr Ernest F Schultz Superintendent (3 interns)  
St Mary's Hospital, Passaic Capacity 237 admissions 5,363 Sister Martha Eucharis, RN Superintendent (2 interns)

## NEW YORK

Greenpoint Hospital Brooklyn Capacity 300 admissions 6 352 Dr Rudolf Raff Medical Superintendent (1 intern)  
Nassau County Sanatorium Farmingdale Capacity 412 admissions 314 Dr J C Walsh Medical Superintendent (resident—tuberculosis)  
Mary Immaculate Hospital Jamaica Capacity 316 admissions 8 692 Sister M Eugenia RN Superintendent (3 interns)  
New York State Psychiatric Institute and Hospital New York Capacity 152 admissions 309 Dr Nolan C Lewis Medical Director (resident—psychiatry)  
United Hospital Port Chester Capacity 218 admissions 5 089 Mr Carl P Wright Jr Superintendent (2 interns)  
Richmond Memorial Hospital Staten Island Capacity 118 admissions 1 902 Mr John H Olsen Managing Director (2 residents—mixed)

## OKLAHOMA

Bone & Joint Hospital Oklahoma City Capacity, 41 admissions 669 Mr C. E. Babcock, Superintendent (resident—orthopedics)

## PENNSYLVANIA

St Vincents Hospital Erie Capacity 334 admissions 10 478 Sister M Elizabeth Superintendent (1 intern)  
Montgomery Hospital Norristown Capacity 160 admissions 4 451 Mrs Helen T Stabler RN Superintendent (2 interns)  
Women's Homeopathic Hospital Philadelphia Capacity 200 admissions 2 810 Mrs Edna J Griffin RN Superintendent (intern, assistant resident—mixed)  
Allegheny General Hospital Pittsburgh Capacity 608 admissions 10 501 Dr George L Wessels Medical Superintendent (assistant resident—pathology)  
Montefiore Hospital Pittsburgh Capacity 257 admissions 7 492 Mr Sidney M Bergman Director (1 intern)  
Presbyterian & Women's Hospitals Pittsburgh Capacity 352 admissions 5 540 Miss Mary Miller RN Superintendent (2 interns assistant resident)

## SOUTH CAROLINA

Columbia Hospital Columbia Capacity 305 admissions 7 905 Mr J B de Loach Superintendent (resident)

## TEXAS

St Josephs Infirmary Houston Capacity 448 admissions 15 398 Sr Mary Baptista RN Superintendent (resident—mixed)

## WEST VIRGINIA

Ohio Valley General Hospital Wheeling Capacity 328 admissions 8,275 Mr J S Turk Superintendent (2 interns)

## WISCONSIN

St Elizabeth Hospital Appleton Capacity 215 admissions 4 741 Sister Mary Venantia Superintendent (1 intern)  
St. Michael Hospital Milwaukee Capacity 175 admissions 5 043 Sister M Alphonse Superintendent (intern)

## MISCELLANEOUS

## REHABILITATION OF RUSSIAN TERRITORY FORMERLY OCCUPIED BY NAZIS

[NOTE—From Moscow, via press wireless, the Soviet Scientists' Antifascist Committee has sent this article under the title *Human Mission of Medical Science*, by Academician Nikolai Burdenko, Hero Socialist-Labor and Chairman Scientific Medical Council of the Peoples Commissariat of Health—ED]

The great patriotic war has reached its zenith. Fierce battles are in progress along the Dnieper. The routed Hitlerite armies are retreating. Thanks to brilliant victories of Soviet arms, an enormous amount of territory has been cleared of the enemy and tens of millions of inhabitants have been liberated from the yoke of the barbarians.

The meeting between the population and the Red army's men was a never to be forgotten spectacle. People rushed forth to meet their liberators with outstretched arms. They expressed in every way their happiness at being freed from fascist prison, from unbearable moral and physical torture, from hunger, cold, mockery, beatings and slavery.

The extent of the material losses and destruction caused by the savage occupationists defies estimation. In order to get some idea of the enormous tasks facing us in the liberated territories it is necessary for people who have gone through the ordeal of the German occupation to speak or to read their depositions. They have suffered inhuman murders, public executions before crowds forced to witness them, beatings, violation of women in front of their children, the ravishing of young girls—all this has left permanent scars on them both mentally and physically. Here the work of builders is insufficient; here one cannot confine oneself to the restoration of material objectives. The health of sufferers must be restored, and this places tremendous responsibility on medical workers.

The guiding principle of medical workers remains the same—*Everything for War!* At the same time medical workers are giving more and more attention to the medical service for liberated territory. This is basic in the new plan of action of both the workers' public health commissariat and the scientific medical council directing research in Russia. One of the most vital and urgent tasks is to stamp out epidemics in liberated cities and villages where typhus, dysentery, diphtheria and other diseases are rampant.

The problem of diphtheria, which affected great masses of children under the Germans, demands new and deeper study. Venereal diseases, syphilis and gonorrhea, are another serious and pernicious result of the German occupation. In their debauchery and crimes the Hitlerites sowed contagion. The number of cases of these diseases among German units was so great that the German staff doctors issued special daily bulletins on the subject. During the latter half of 1942 active syphilis and mass scale gonorrhea broke out in Smolensk among German soldiers and the population.

Equally vital is the problem of tuberculosis. The use of the term epidemic tuberculosis applied to this disease by the Peoples' Commissariat of Health is nowhere more justified than in the German occupied territories. Under the Germans tuberculosis became a mass disease with fatal results among thousands of persons forced by the Germans to do compulsory labor.

At the same time the invaders destroyed the entire network of antituberculosis institutions and deprived the sufferers of medical treatment. Children in particular have suffered from this disease. Clinics have been opened in Orel, Kursk and Smolensk. They record an increase in cases of children with colds in whom manifestations of lymphadenitis have been observed.

The hunger rations on which Germans had kept the population over a long period of time brought the usual results: swelling due to lack of albumin, anemia, hypoproteinemia, scurvy and a number of trophic disorders connected with avitaminosis, for instance amenorrheas.

In order to cure these diseases, sources of new foods must be found on a countrywide scale. There should be mass production of vitamins, standard preparations and synthetic substitutes. Endocrinologists are faced with new tasks in con-

nection with glandular therapy for cases of premature aging and debility.

In the sphere of nutrition, children were the center of attention. Millions of infants have been deprived of normal breast feeding as the result of hypogalactia. Lacking mother's milk they did not receive necessary nourishment in the form of protein, fats and carbohydrates. The children are our future. It is the duty of doctors and scientists to put them on their feet and to see that their defective nourishment is compensated and thus to eliminate the results of the crimes of the fascist brutes.

The neuropsychiatric condition of the population of the liberated areas also needs attention. How much mental torture these people have lived through! How many people were left with shattered nerves who require aid of an understanding doctor and special treatment! I myself conducted a questionnaire as to the kind of work intellectual persons—engineers, technicians, teachers—did under the Germans. They presented a terrible picture of humiliation and persecution. Teachers were particularly abused. Elderly men and women were made to do heavy physical labor. When asked whether they could return to their old posts, they replied "We have not the strength to do so, we need a little time for rest."

There were innumerable cases of violation of women and girls.

It is necessary to open psychoneurologic and psychotherapeutic clinics and sanatoriums in order to help restore the morale of those who suffered at the hands of the Germans.

All this demands restoration of the entire communal system of public health and hygiene. Entire cities, among them Mtsensk, Livny, Orel and Smolensk, have been practically razed to the ground by the Hitlerite bandits.

Thousands of the Soviet people were shot by Germans in the streets of cities and outlying villages. The executioners hastily threw the bodies in holes. The soil is polluted and requires strict sanitary control by doctors to prevent possible pernicious consequences.

The scientific medical council and the peoples' commissariat of health of the Union of Soviet Socialist Republics are concentrating attention on all these problems. They are making profound study of the needs of the liberated areas, assigning corresponding tasks to scientific research institutions and outlining their activities. The councils are convening plenum scientific councils of the union and fraternal republics for detailed discussion of the problems to be solved and the tasks to be fulfilled.

PSYCHIATRIST OF BRITISH ARMY  
PRAISES U S MENTAL TESTS

Brig J R Rees, chief of the neuropsychiatric service of the British army, recently told of the technique of American doctors enabling the return to active duty of 60 per cent of a group of soldiers who in the last war would have been known as shell shock cases. The American system, he said, was "far ahead of anything we have in England." Brigadier Rees further states that England has looked to the United States as "the home of progress in psychiatry." He said that America had done "magnificent work" in the last war in psychologic testing of prospective soldiers and that not only England but Germany also has borrowed largely from American procedure.

## U S CADET NURSE CORPS

In a recent announcement by Miss Lucile Petry, director Division of Nurse Education, U S Public Health Service, Federal Security Agency, it is stated that the Bolton act funds have been allocated to thirty-two colleges and universities for all expense scholarships in postgraduate programs in nursing education, including public health nursing. Additional applications are still under consideration. The announcement pointed out that these scholarships are available to graduate nurses who show an aptitude for teaching and for public health nursing and to those nurses now on staffs who are in line for advancement or who feel the need of additional courses.



## PUBLIC HEALTH UNDER HITLER

According to DKD of August 25, German medical science is working without respite to banish the dangers threatening the health of the soldiers in the extensive front zones of the war. The new German newsreel shows pictures of the research and the experiments on combating malaria carried out at the Institute for Tropical Medicine of the Academy for Military Medicine in Berlin. We are shown the practical application of the remedies developed there in the marshy areas of the Kuban front, where special powders are sprayed from aircraft over wide areas to destroy the breeding places of the midges which are the carriers of malaria infection.

*Novoe Vremya* of July 28 states that, by urgent order of the competent authorities, doctors in private practice are reminded that it will be at their own risk and peril if when giving medical certificates to persons employed in the German armed forces, they fail to exercise the most rigorous, unbiased professional accuracy within the meaning of the regulations defining the form, content and manner of issue of medical certificates.

According to the *Hamburger Fremdenblatt* of August 24 the inoculations against typhus, which are free of charge, will continue during the next week for all Volksgenossen who have not yet found time to have it done. Every one who wishes to protect himself against typhus by being inoculated in advance is therefore given another opportunity to do so. On principle the inoculations take place only at the ARP first aid posts and in individual large concerns but not in the surgeries of doctors.

*Dnes* of July 1 states that, owing to the shortage of doctors, medical students after a five years course will have their one year of training not in the university hospital but as employees of the chief public health directorate in villages.

According to Radio Paris of September 20 the relief train visited by Petain and Laval on September 19 in Vichy includes a hospital car of 30 beds, a surgery car with x-ray and blood transfusion apparatus, a dressing ward, a maternity car (birth room and rest room), kitchens, reserves of clothes and utensils for air raid victims.

# ORGANIZATION SECTION

## THE WAGNER-MURRAY-DINGELL BILL

Open Letter of Massachusetts Medical Society to its Representatives in Congress

[This open letter has been sent to the Massachusetts representatives in Congress. It is expressive of the point of view of the Massachusetts Medical Society, a point of view which is shared with the Medical Societies of Maine, New Hampshire, Vermont, Rhode Island and Connecticut, with regard to Senate bill 1161 and House bill 2861, the so called Wagner-Murray-Dingell bills.]

Dear Sir

The Massachusetts Medical Society, in conjunction with the Medical Societies of Maine, New Hampshire, Vermont, Rhode Island and Connecticut, has studied Senate Bill 1161 and House Bill 2861 now before the Congress of the United States and respectfully submits its views on this proposed legislation.

We approve of the broad medical objective of the act that we interpret to be an attempt to improve the health of our people. As a basis of our approval we cite the progressive leadership which the physicians of New England have always shown in the development of public health enterprises. For more than fifty years we have consistently supported the plea for the establishment of a National Department of Health with a secretary in the President's cabinet, under whom would be coordinated many important public health programs, exclusive of the Army and Navy. These are now scattered through various departments and bureaus of the federal government and already play a large role in the provision of medical care for the people of this country.

We approve of the use of the insurance principle on a voluntary basis as a means to aid the individual to budget against the cost of medical care. We maintain that, when insurance programs are not directly under the supervision of the medical profession by whom medical care is to be rendered, they should provide for cash benefits to be paid to the individual, for we firmly believe that the citizens of New England are capable of using cash benefits to pay the cost of medical care.

We believe that S 1161 and H 2861 do not provide for the sound development of a national health program. It is implied by the act that the distribution of compulsory savings managed by federal authorities will guarantee better health for all of the people. We sincerely doubt that such an objective can be realized in this way. In the New England states, judged by any standards with which we are familiar there is no need to revolutionize the habits of the people in their methods of obtaining medical care.

Private enterprises in the field of voluntary prepaid medical and hospital insurance are increasing rapidly. These facilities

should be utilized by the states, if necessary through federal grants-in aid, so that each state can purchase medical care for those who cannot purchase it for themselves. This we believe to be a development that would be acceptable to the New England people, for thereby medical care could be provided even for the indigent, who are public charges, a provision most desirable in those communities that have been unable or unwilling to meet this obvious responsibility.

We shall be glad to work out plans with representatives of the federal and state governments to improve the health of all the people, but we should expect that any plans that might be devised would take full advantage of existing agencies and be developed within the social patterns that are well understood by our people.

Very truly yours,

MICHAEL A. TIGHE, M.D.  
Secretary

ROGER I. LEE, M.D.  
President.

## NATIONAL PHYSICIANS' COMMITTEE ADOPTS PROGRAM

At the annual meeting of the National Physicians' Committee Board of Trustees at Chicago, November 20-21 a greatly expanded program of educational efforts was formulated and officially confirmed. With unanimous approval the following resolution was adopted:

WHEREAS The preservation of the principles fundamental to maintaining the quality of American medicine requires the development and encouragement of plans for meeting the cost of unusual or prolonged illness and

WHEREAS A survey of methods already available for prepayment costs indicates that facilities are in existence to provide for at least the most pressing demands therefore be it

Resolved That the Management Committee is authorized and the Administrator is authorized and instructed to proceed with efforts designed to

(a) Encourage the medical profession to active participation in the development of plans and the more general use of existing facilities to provide for easy payment of insurance against unusual or prolonged illness

(b) Educate the people to the importance, nature and value of prepayment facilities within the framework of principles approved by the medical profession now available for meeting the costs of unusual illness

(c) Investigate conditions relating to and inform industry concerning the principles underlying sound participation with employees in prepayment plans for meeting the cost of unusual or prolonged illness and hospitalization

(d) Inform private insurance underwriters of the opportunity that is being offered through cooperation in nationwide efforts to provide group insurance policies for those needing or desiring insurance against the hazards of unusual illness

(e) Encourage contributors and friends to a greater degree of participation in the efforts of the National Physicians' Committee in this constructive program

## MEDICAL LEGISLATION

## DISTRICT OF COLUMBIA

*Bill Introduced*—S 1546, introduced by Senator O'Daniel, Texas, for Senator McCarran, Nevada, proposes to amend an act relating to the incorporation of Providence Hospital in the District of Columbia to (1) change the name of the corporation to the "Providence Hospital" and (2) authorize the corporation to conduct not only a hospital, clinic and all the departments, staffs and services usually connected therewith, but also a school for the education and training of nurses and interns with full power to examine and nurses and interns and to issue suitable certificates evidencing the completion of their courses of training.

## MEDICAL BILLS IN CONGRESS

*Change in Status*—H R 3598, the First Supplemental National Defense Appropriation Act, 1944, has been reported to the Senate with amendments. It does not include any appropriation to enable the Public Health Service to provide medical care for communities critically in need of such care. Senator Russell, Georgia, however, has given notice that he will offer from the floor of the Senate an amendment to provide \$345,000 to enable the Surgeon General of the Public Health Service, on application of a city, county or other local subdivision of government duly approved by the state health department having jurisdiction over the city, county or other local subdivision of the government, to enter into agreements with private practitioners, physicians and dentists under which, in consideration of the payment to them of a relocation allowance of not to exceed \$250 per month for three months and actual cost of travel and transportation of the physician or dentist and his family and household effects to the new location, such physician or dentist will agree to move to and engage in the practice of his profession in such area for a period of not less than one year. This amendment will provide that no such contract may be

entered into with any physician or dentist unless such physician or dentist shall be admitted to practice by the state authority having jurisdiction of the new location. Each applicant subdivision, moreover, will be required to contribute \$100 to the total cost of such relocation allowance, travel and transportation costs of each such physician or dentist and his family obtained by said applicant.

*Bills Introduced*—S 1566, introduced by Senator Wiley, Wisconsin, proposes to consolidate and coordinate government activities affecting the reestablishment and rehabilitation of veterans in the Veterans' Administration. H R 3717, introduced by Representative Rolph, California, proposes to amend a joint resolution approved April 29, 1943 making an appropriation to assist in providing a supply and distribution of farm labor for the calendar year 1943, so as to authorize the use of the funds in furnishing, by loan or otherwise, of health and medical services to migrant workers engaged in agricultural work, and to members of the families of such workers, to which adequate health and medical services are not otherwise available in the area where they are employed, whether or not such workers have been recruited and transported pursuant to the joint resolution. S 1943, introduced by Senator Johnson, California, is a companion bill in the Senate. H R 3718, introduced by Representative Sparkman, Alabama, proposes to grant military rank to certain members of the army nurse corps. H R 3733, introduced by Representative Barry, New York, provides for college education for qualified postwar veterans. H R 3761, introduced by Representative Bolton, Ohio, provides for full military rank for members of the army nurse corps, dietitians and physical therapy aides. H R 3779, introduced by Representative Rogers, Massachusetts, proposes to insure training and rehabilitation for men and women in the armed services.

## WOMAN'S AUXILIARY

## Kansas

The Shawnee County Medical Auxiliary held a meeting October 11, at the home of Mrs. E. H. Decker, Topeka. The guest speakers were the WAC's recruiting officer in Topeka and Lieut. Maude Meyers, chief nurse of the Topeka Army Air Base.

## Missouri

The Missouri auxiliary held the fall board meeting in September in Jefferson City, with forty-two members and visitors present, at which time the following resolution was adopted:

*Resolved* that we, the Woman's Auxiliary to the Missouri State Medical Society, do heartily endorse the movement to control cancer through education and pledge our friendly cooperation and moral support of the Missouri Women's Field Army Unit of the American Society for the Control of Cancer.

For the twelfth year the Missouri auxiliary will sponsor a health essay contest for the high school students in the state. The subject for the contest is "Civilian Health in Wartime," and cash prizes amounting to \$60 will be made.

The *Quarterly Bulletin* of the Missouri auxiliary has completed its tenth year. Mrs. A. J. Crider of Dixon is the editor.

## New Jersey

The Middlesex County auxiliary held its first meeting this year at Highland Park, October 20.

## North Carolina

Mrs. Joseph A. Elliot, state program chairman of the Woman's Auxiliary to the North Carolina Medical Association, published in the October issue of the *North Carolina Medical*

*Journal* the program of the auxiliary to the American Medical Association as sent out by Mrs. Oscar W. Friske, national program chairman, added to which were notes to aid in the state's special projects.

In the same issue of the *North Carolina Medical Journal* Mrs. John C. Reece, North Carolina Hygeia chairman, published the following memorandum: "Hygeia, remember me? I am published by the American Medical Association and I interpret scientific medical information to the lay public. I also help to support your bed fund for tuberculous patients from your subscription. Do not overlook me this year or leave me out of your reading. I will not only keep you informed but will help your auxiliary. Plan now to send in your subscription for me."

## South Dakota

A meeting of the advisory board of the Woman's Auxiliary to the South Dakota State Medical Association was held on October 27 at the home of Mrs. D. S. Baughman, Madison. The members who were present were Mrs. John C. Hagin, Miller, state president, Mrs. D. S. Baughman, Madison, state program president-elect, Mrs. C. E. Sherwood, Madison, state chairman, Mrs. J. R. Westaby, Madison, chairman Benevolent Fund Committee, Mrs. E. T. Sout, Pierre, corresponding secretary and treasurer, Mrs. G. E. Burman, Carthage, state chairman, public relations and publicity, and Mrs. R. A. Buchanan, Huron.

At this meeting plans were formulated for work to be done by the district auxiliaries during the coming year. A delightful luncheon was served.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Changes in Faculty at Southern California**—Included among recent changes at the University of Southern California School of Medicine, Los Angeles, are the following appointments

Dr Justin R. Dorgeloh to assistant professor of pathology  
Walter E. Ward Ph.D. to assistant professor of bacteriology  
Dr Homer C. Lawson to assistant professor of pharmacology  
Dr Ernest D. Gardner to assistant professor of anatomy  
Richard J. Winzler Ph.D. assistant professor of biochemistry

**Osler Meeting**—Dr Esther Rosencrantz, associate professor emeritus of medicine, University of California Medical School, San Francisco, gave an address entitled 'Sir William Osler' before the Los Angeles County Medical Association and the Barlow Society for the History of Medicine on November 18. A feature of the meeting was an Osler exhibit. Dr George Dock, Pasadena, who was one of Osler's colleagues during the Pennsylvania period, discussed a journey made with Osler in search of rare books. Dr Rosencrantz was a member of one of the last classes taught at Johns Hopkins University School of Medicine, Baltimore, by Osler.

### DISTRICT OF COLUMBIA

**Health Program for Government Employees**—An employee health program for the Commerce Department, Maritime Commission and Office of the Coordinator of Inter-American Affairs was reported in the *New York Times*, November 17. The plan is designed to keep employees of the three agencies well and their work efficient by diagnosing and treating their illnesses and injuries and obtaining the services of outside physicians when necessary.

### GEORGIA

**Dr Kelly Joins A. M. A. as Secretary of Public Relations**—Dr George Lombard Kelly, since 1935 dean of the University of Georgia School of Medicine, Augusta, has been given a leave of absence to accept an appointment as Secretary of the Council on Medical Service and Public Relations of the American Medical Association, Chicago, effective January 1. Dr Edgar R. Pund, professor of pathology at the medical school, will serve as acting dean. Dr Kelly, a member of the Georgia staff since 1918, graduated there in 1924.

### IDAHO

**Personal**—Dr David A. McClusky, Buhl, on October 15 was named medical superintendent of the State Hospital, South, Blackfoot. Dr McClusky succeeds Dr George Ritter Smith, who has been assigned to the state department of public health.

**Society News**—Dr Harold E. Dedman, Boise, was chosen president of the Southwestern Idaho District Medical Society at its meeting in Boise, October 21. Other officers include Dr Ralph E. Davis, Boise, vice president, and Joseph M. Thomas, Meridian, secretary-treasurer. Capt. Norman L. Murray, M. C., A. U. S., discussed "Office Management of the Diabetic."—Dr William C. Smail, Jerome, addressed a recent meeting of the South Side Medical Society in Jerome on "Dyspareunia."

### ILLINOIS

**Personal**—Dr Josiah J. Moore, Chicago, has been appointed a member of the professional committee for medicine of the state department of registration and education, succeeding the late Dr Arthur H. Geiger, who died May 12.—Dr Edward J. McNulty on November 1 was named health officer of LeRoy.

**Outbreak of Influenza**—A total of 2,600 persons were reported ill with influenza in Waukegan and North Chicago, December 2. Newspapers reported that the outbreak was mild and that schools and factories had not been ordered closed. Persons feeling the symptoms of grip or influenza were urged to remain in bed. At Loyola Academy, Chicago, 100 of 600 students were absent December 2 because of the illness. Seven of twenty-five faculty members were also ill. The school was to stay closed for a number of days.

### Chicago

**Course in Hospital Administration at Northwestern**—The Johnson and Johnson Research Foundation, New Brunswick, N. J., recently made a grant to Northwestern University Medical School to assist in making possible a special course in hospital administration. Students enrolled in the course represent nineteen different hospitals. Of eight students not connected with a hospital, two are employed on hospital magazines, two are physicians, one is director of a hospital council and one is employed by the American College of Surgeons.

**Research Fellowships**—Applications for research fellowships in medicine, dentistry and pharmacy in the University of Illinois are now being considered for the year beginning Sept. 1, 1944. Appointments to these fellowships will be announced on January 1. Candidates for these fellowships must have completed a training of not less than eight years beyond high school graduation. The fellowship carries a stipend of \$1,200 per calendar year with one month's vacation. Application blanks and further information may be secured from William H. Welker, Ph.D., secretary of the committee on graduate work in medicine, dentistry and pharmacy, 1853 West Polk Street, Chicago 12.

**Changes in the Faculty at Illinois**—The University of Illinois College of Medicine announces the following recent appointments to the faculty:

Dr Hugh Thompson Carmichael to associate professor of psychiatry  
Dr Dean A. Collins to associate professor of physiology  
Dr Harry S. Gragle to professor of ophthalmology, also director of the Illinois Eye and Ear Infirmary  
Dr Richard L. Jenkins to assistant professor of criminology, social hygiene and medical jurisprudence  
Dr Peter C. Kronfeld to associate professor of ophthalmology, also director of education (eye) in the Illinois Eye and Ear Infirmary  
Lawrence J. Linck, M.S., lecturer in public administration in the department of criminology, social hygiene and medical jurisprudence, also director of the division of services for crippled children  
Dr Ladislav J. Meduna to associate professor of psychiatry  
Howard J. Shaughnessy, Ph.D., to associate professor of bacteriology and public health  
Beatrice D. Wade, O.T.R., associate professor and director of occupational therapy

**Governor's Conference on Exceptional Children**—The second annual Governor's Conference on Exceptional Children will be held at the La Salle Hotel, December 13, under the auspices of the Commission for Handicapped Children. Gov. Dwight H. Green will address the session on "The Handicapped—A Challenge to Us All." Among the speakers on the program will be:

Mrs. Walter M. Rennie, president Illinois Federation of Women's Clubs, Legislation for Handicapped Children  
Charles Scott Berry, Ph.D., director of special and adult education, Ohio State University, Columbus, The Gifted Child—An Undeveloped State Resource.  
Mr. Alden B. Mills, vice president Illinois Association of School Boards, Where Do We Go From Here?

Group meetings will feature sessions the first day on "The Development and Utilization of the Potentialities of Handicapped Children Through Education, Health, Employment and Welfare." Other speakers will include Dr. Roland R. Cross, Springfield, state director of public health; Rodney H. Brandon, Springfield, state director of public welfare; Dr. Meyer A. Perlstein, member of the attending staff of Cook County Hospital; and Dr. Raymond B. Allen, dean, University of Illinois College of Medicine.

**Dr. Aldrich to Direct New Pediatric Project at Mayo Clinic**—Dr. Charles Anderson Aldrich, physician-in-chief at the Children's Memorial Hospital and professor of pediatrics at Northwestern University Medical School, has been named to organize and direct a long term research program in preventive medicine in childhood at the University of Minnesota Graduate School, Minneapolis-Rochester. The project will be financed by the Mayo Clinic and will be carried out in cooperation with Dr. Henry F. Helmholtz, Rochester, Minn., in charge of the department of pediatrics at the clinic. It is planned to begin the preventive medicine program with antepartum and newborn care, the children in older age groups to be reached as the project expands. Initially the plan will be confined to the city of Rochester. Dr. Stanley Gibson, professor of pediatrics at Northwestern and a member of the staff of Children's Memorial Hospital for twenty-two years, will succeed Dr. Aldrich as physician in chief at Children's Memorial Hospital, and Dr. John A. Bigler will become assistant physician-in-chief and medical director. All changes will be effective January 1. Dr. Aldrich graduated at Northwestern in 1915. Secretary of the American Board of Pediatrics, he has been associated with Children's Memorial Hospital since 1921 and with Northwestern since 1934.

## LOUISIANA

**University News**—On December 20 Dr Reginald Fitz, assistant to the dean, Harvard Medical School, Boston, will deliver the commencement address at the Louisiana State University School of Medicine, New Orleans. The exercises will close the March-December 1943 school year, at which 77 seniors will receive the degree of doctor of medicine. Of these, 38 are affiliated with the army specialized training unit number 1876 and 20 with the navy specialized training unit. Nineteen are civilians. The new school year will open on January 3.

## MARYLAND

**Dr Davis Named Director of Communicable Diseases**—Dr Joseph W. Davis, Fairmont, W. Va., for six years health officer of Marion County, W. Va., has been appointed director of the bureau of communicable diseases in the Baltimore City Department of Health, effective December 1, filling the vacancy left when Dr David H. Andrew, Baltimore, resigned to enter private practice.

**Institute on the Exceptional Child**—"Psychotherapy for the Exceptional Child" was the theme of the tenth Institute on the Exceptional Child at the Belvedere Hotel, Baltimore, November 9. Among the speakers were:

- Dr John C. Whitcomb, Baltimore, chairman
- Dr George H. Preston, Baltimore, Common Factors in Mental Health
- Dr Alice L. Rockwell, Baltimore, Therapy for Mothers Runs Parallel with Treatment of Children
- Dr Jacob H. Conn, Baltimore, Play Therapy—The Method of the Play Interview
- Harry I. Fishbein, Baltimore, School Aspects of Psychotherapy
- Dr Leo Kanner and Trude Tietze, Baltimore, Psychotherapy for the Parents of Retarded Children
- Dr Leslie B. Hohnman, Baltimore, Some Further Aspects of the Parental Problem

**Vesalius Anniversary Celebration**—The Johns Hopkins Medical History Club commemorated the four hundredth anniversary of the publication of Andreas Vesalius's *De Humani Corporis Fabrica Libri Septem* on November 1 in the lecture hall of the Institute of the History of Medicine, Baltimore. The following program was presented:

- Dr George W. Corner, Baltimore, Andreas Vesalius in the History of Anatomy
- Dr Gregory Zilboorg, New York, Psychological Sideights on Andreas Vesalius
- Isidore Edelstein, Ph.D., Baltimore, Andreas Vesalius the Humanist
- Dr Owsei Temkin and William L. Straus Jr., Ph.D., Baltimore, Some Aspects of the Anatomical Material of Vesalius
- Dr Henry E. Sigerist, Baltimore, Albanus Tortorius and the German Edition of the Epitome

## MICHIGAN

**Sanatorium Named for Physician**—The board of supervisors on October 22 officially changed the name of the Calhoun County Public Hospital, Battle Creek, to the Arthur S. Kimball Sanatorium, in honor of the late Dr Kimball, who was instrumental in establishing the institution in 1921 for the treatment of tuberculous patients. Dr Kimball died in 1921 at the age of 42.

**Acting Director Chosen for New County Health Department**—Dr Joseph G. Molner, deputy superintendent of the Detroit Department of Health, has been selected as the acting director of the newly organized Wayne County Department of Health on a part time basis (THE JOURNAL, May 29, p 322, and June 12, p 455). Newspapers report that the county board has sought unsuccessfully for several months to obtain a full time health officer.

**Public Health Officers**—John M. Hepler, C.E., director of the bureau of engineering of the state department of health, Lansing, was inducted into the presidency of the Michigan Public Health Association at its annual meeting in Grand Rapids, November 4. Nathan Sinai, D.P.H., Ann Arbor, is the new president-elect. Dr Hugh B. Robins, Marshall, director of the Calhoun County health department, is vice president, and Miss Marjorie Delavan, Lansing, secretary-treasurer, reelected.

**Site Chosen for Medical Center**—The board of education of Detroit on November 23 approved a site for the Wayne University Medical Science Center. The first unit, the Wayne University County Hospital, will occupy three blocks between Farnsworth and Theodore and running from Beaubien to Hastings streets together with one bounded by Frederick, St Antoine, Farnsworth and Beaubien. In addition to these three blocks to be acquired immediately, the board recommended that the district bounded by Warren, Brush, Hastings and Ferry, with a gross area of 53 acres, be earmarked for the future development of the center. The utilization of this site will place the medical center's activities close enough to other university facilities to allow a functional integration as well as

permitting the advantage of proximity to the hospitals on the east side of Woodward Avenue. Children's, Woman's, Harper and Grace hospitals, now affiliated with the Wayne University College of Medicine, are within walking distance of the planned site. When completed, the fifty million dollar project will include five main buildings as well as a number of service units. In addition to the university hospital, the construction of which is first on the list, the main buildings include the Hall of Medical Sciences, the Institute of Industrial and Public Health, the Center for Continuation Study and the Medical Science Library. The county hospital is to cost two million dollars and the Hall of Medical Sciences five million. Smith, Hinchman & Grylls have been chosen architects for the project.

## MINNESOTA

**Changes in Hospital Superintendents**—Dr Stanley B. Lindley, assistant superintendent of the Fergus Falls State Hospital, Fergus Falls, has been appointed superintendent of the Willmar State Hospital, Willmar. The latter position has been vacant since the transfer of Dr Magnus C. Petersen to Rochester. Dr Walter P. Gardner has resigned as superintendent of the Anoka State Hospital, Anoka, to return to private practice. Dr Edmund W. Miller, assistant superintendent of the St. Peter State Hospital, St. Peter, has been named acting superintendent at Anoka.

**Dr Harrington to Retire as Health Commissioner**—Dr Francis E. Harrington will retire as commissioner of health of the city of Minneapolis on June 19, 1944, when he reaches the legal retirement age in the city. Dr Harrington is also acting superintendent of the Minneapolis General Hospital, including the Parkview Sanatorium and the Elizabeth Kenny Institute. Wallace D. Hunt, senior surgeon, U.S. Public Health Service Reserve, has been detailed by the surgeon general to assist the city of Minneapolis in the administration of public health. It is expected that he will remain in this status until July 1, 1944.

## NEW YORK

**Central Adirondacks Practically Free of Hay Fever**—The state department of health on December 5 announced that the central Adirondacks section of the state was practically free this year from ragweed and its pollen. During August and September pollen count survey stations were conducted in four places on the rim of the so-called ragweed free area in the counties of Herkimer, Hamilton and Franklin. The counts were so low that it is now generally believed that the free area has grown considerably, probably as the result of a long term program of weed elimination carried on by local counties and organizations interested in creating havens in the region for hay fever sufferers. The village of Old Forge, Herkimer County, was found to have a pollen index of zero, the first place to have this count in the six years the surveys have been made. In Speculator and Indian Lake, Hamilton County, there was no time during the fifty-one day survey that the pollen concentration was sufficiently high to cause hay fever symptoms. Loon Lake, Franklin County, had only five days which might be considered "hay fever days."

## New York City

**Harvey Lecture**—John Howard Mueller, Ph.D., professor of bacteriology and immunology, Harvard Medical School, Boston, will deliver the third Harvey Society Lecture of the current series at the New York Academy of Medicine, December 16. His subject will be "Nutrition of the Single Cell, Its Applications in Medical Bacteriology."

**Friday Afternoon Lectures**—The New York Academy of Medicine opened its 1943-1944 Friday afternoon lecture series on November 5 with a talk by Dr Stuart W. Harrington, Rochester, Minn., on "Diaphragmatic Hernia." Included in the series are the following:

- Dr Leonard Greenburg, Health Hazards in War Industry, November 12
- Dr Harold M. Marvin, New Haven, Conn., The Treatment of Paroxysmal Tachycardia, November 19
- Dr Ephraim Shorr, Endocrine Treatment of Menstrual Disorders, December 3
- Dr Harold Thomas Hymann, New York, John F. Mahoney, Staten Island, N.Y., senior surgeon, U.S. Public Health Service, Recent Advances in the Treatment of Syphilis, Including the Use of Penicillin, December 10
- Dr Maxwell Finland, Boston, A Review of Atypical Infections of the Respiratory Tract and Their Management, December 17
- Dr David P. Barr, Recent Advances in Drug Therapy, January 7
- Dr Homer F. Swift, Rheumatic Fever, January 14
- Dr Philip D. Wilson, The Modern Conception of the Surgery of Amputation, January 21
- Dr George T. Pack, L. Duncan Bulkley Lecture, Cancer of the Stomach, January 28
- Dr Donovan J. McCune, Dwarfism, February 4

Dr Joseph H Globus Cerebrovascular Accident February 18  
Dr Alexander Randall Philadelphia Recent Advances in Knowledge  
Relating to the Formation Recognition and Treatment of Kidney  
Calculi February 25  
Dr William P Thompson Hemorrhagic Diseases March 3  
Dr Franklin M Hanger Jr Present Day Views of Functional Liver  
Tests March 10  
Dr Allan L Barach Physiologically Directed Therapy in Intractable  
Asthma March 17  
Dr Norrin H Jolliffe Avitaminoses—Diagnosis and Principles of  
Treatment March 24  
Dr Howard C Taylor Jr Diagnosis and Treatment of Malignancy  
of Pelvic Organs March 31  
Dr Milton Benjamin Rosenbluth Practical Management of Hyperten-  
sion April 7  
The Most Recent Methods in the Treatment of War Wounds and Sur-  
gical Shock April 14 speaker to be announced

## OHIO

**New Bureau of Maternal and Child Health**—The Toledo Board of Health on November 2 created a city bureau of maternal and child health. Dr Louis F Payne Jr, pediatrician on the board's tuberculosis control program will in addition to his regular work, serve as head of the new unit.

**Twenty-Five Years as Head of Department of Physiology**—On November 18 associates and students of Dr Carl J Wiggers gave a dinner to honor him on his completion of twenty-five years as professor and head of the department of physiology at Western Reserve University School of Medicine. Cleveland Dr Torald Sollmann, dean of the medical school, presided. Dr Wiggers, who graduated at the University of Michigan Medical School, Ann Arbor in 1906, joined the physiology department at Western Reserve in 1913, serving as assistant professor of physiology. In 1918 he was named to his present position.

**Advisory Committee to Coordinate Tuberculosis Programs**—Dr Joseph B Stocklen, controller of tuberculosis for Cuyahoga County, Cleveland, has been named chairman of the recently appointed advisory committee on coordination of tuberculosis programs (THE JOURNAL February 6, p 447). The executive committee of the Ohio Public Health Association provided for the creation of the committee at its May meeting but Dr Charles A. Doan, Columbus, president of the association, only recently named its members. In addition to Dr Stocklen, remaining members of the committee include Dr Myron D Miller, Columbus, Dr William D Hickerson, Cincinnati, Dr Lorin E Kerr Jr, Oberlin, Dr Earl E. Kleinschmidt, Toledo, Dr Clarence L Hyde, Akron, Dr Harold H. Brueckner, Lima, Dr Lynne E Baker, Dayton, and Delmar R. Serafy, Canton. W. K. Curfman, Cincinnati, and Charron G. Payne, Columbus. The first meeting of the committee was held in Columbus on December 2.

## PENNSYLVANIA

**Society Adopts Medical Bureau for Business Activities**—The Dauphin County Medical Society recently decided to let the Medical Bureau of Harrisburg, serve as the central business office of the society. Secretarial and clerical activities will be carried on under the direction of the society's secretary. The decision will provide a permanent headquarters providing better opportunities for desirable public relations. The Medical Bureau of Harrisburg, of which John A. McGhee is executive director, hopes the new program will be adopted by other medical societies.

**Regional Health Institutes**—On November 10 the state department of health held a regional health institute at Erie in cooperation with the city bureau of health and collaborating health agencies the first in a series of twelve planned throughout the state. Dr Alexander H. Stewart, Harrisburg, state secretary of health, addressed the first session. Included among the other speakers were:

Dr John Moore, Harrisburg, Responsibilities of Health Departments in Cities and Smaller Communities to Meet the Problems of a Nation at War  
Ralph C. Williams, New York, senior surgeon, U. S. Public Health Service, the Relationship of Federal State Local Health Agencies in an Integrated Program  
Dr Nels A. Nelson, Baltimore, The Development of Venereal Disease Control Programs in an Industrial Area  
Col. Crawford F. Sams, M. C. U. S. Army, War and the Migration of Tropical Diseases  
Dr Charles Howard Macey, Pittsburgh, How May We Hold the Gains and Secure Further Advances Toward the Control of Tuberculosis?  
Dr John R. Conover, Pittsburgh, Industrial Diseases and the War Effort  
Dr Herbert T. Kelly, Philadelphia, Improving the Nutrition of All the People  
Dr Stanley P. Reimann, Philadelphia, The Challenge to the School and College in the Health Field  
Mr Austin J. White, Erie, The Press Looks at Public Health

The second institute was conducted in Washington, November 17.

**Scott Award to Veterinary Surgeon**—Otto Stader, VMD, veterinary surgeon, Ardmore, has been given the John Scott Award and prize of \$1,000 by the board of directors of City Trusts of Philadelphia for the invention of the reduction and fixation bone splint. Dr Stader at one time served as instructor in veterinary science at the University of Wisconsin, Madison and in 1941-1942 was president of the American Animal Hospital Association. Recently he has been conducting demonstrations at various naval stations showing the application of his invention.

## Philadelphia

**Special Lectures**—Dr Cyrus C. Sturgis, Ann Arbor, Mich., will address the Philadelphia County Medical Society and the College of Physicians of Philadelphia at a combined meeting, January 12, on 'A Study of the Incidence of the Commoner Types of Anemia, Their Cause and Treatment.' On February 2 Dr John A. Toomey, Cleveland, will deliver the Nathan Lewis Hatfield Lecture of the College of Physicians on 'Observations on the Treatment of Infantile Paralysis in the Acute Stage.'—Dr John P. Peters, John Slade Ely, professor of medicine, Yale University School of Medicine, New Haven, presented the annual Alpha Omega Alpha Honor Lecture at the Hospital of the University of Pennsylvania, November 19. His subject was 'A New Frame for Metabolism.'

## RHODE ISLAND

**Personal**—Dr Lucius C. Kingman, formerly president of the Rhode Island Medical Society, has been named a member of the board of hospital commissioners of Providence to fill the unexpired term of Dr John M. Peters, resigned.—Dr Peter F. Harrington, director of tuberculosis for the Providence Health Department, was recently elected chairman of the health division of the Providence Council of Social Agencies.—Dr Joseph Marks, Central Falls, has been appointed school medical inspector to succeed Dr Adolph R. V. Fenwick, resigned.

## VERMONT

**State Medical Election**—Dr Frank J. Hurley, Bennington, was named president elect of the Vermont State Medical Society at its meeting October 25 and Dr Charles H. Swift, Rutland, was installed as president. Dr Benjamin T. Cook, Rutland, is the secretary.

**University News**—Dr William J. Bruckner, New Haven, Conn., addressed the student body of the University of Vermont College of Medicine, Burlington, November 26, on "Medical Experiences in the South Pacific." Dr Henry N. Harkins, Baltimore, discussed 'Therapy of Burns' before the Osler Clinical Society, November 26.

## VIRGINIA

**Personal**—Dr David L. Harrell Jr., superintendent of the Petersburg State Colony, Petersburg, has been appointed superintendent of the Western State Hospital at Staunton. He succeeds Dr Joseph S. deJarnette, who has spent fifty-four years in the service of the state hospital system.

**University News**—A. W. Hurd, former dean of Hamline University, St. Paul, has become a director of the bureau of educational research at the Medical College of Virginia, Richmond, under a grant from the general education board. *Southern Medicine and Surgery* reports that Dr Hurd's first work will be to direct an experimental study of the curriculum of the school of nursing, beginning with an analysis of the science subjects nurses use in practice. Dr Randolph H. Hoge, assistant professor of gynecology, has been appointed professor of gynecology at the medical school.—Dr Walter Ansell Derrick, Charlottesville, has resigned as associate professor of pathology at the University of Virginia Department of Medicine, Charlottesville, to become director of the Kingston City Laboratory, Kingston, N. Y.

**Course in Ophthalmology and Otolaryngology**—The Gill Memorial Eye, Ear and Throat Hospital, Roanoke, announces that it will hold its eighteenth annual spring graduate course in ophthalmology and otolaryngology beginning Monday, April 3. Among the participants will be Drs Paul H. Holmger, Chicago; Anderson C. Hilding, Duluth; Minn.; Major Isador Jerome Hauser, A. U. S. Moscos, H. Lurie, Boston; Beverly Douglas, Nashville, Tenn.; Rear Admiral Ross T. McIntire, surgeon general, U. S. Navy; Thomas Parran, surgeon general of the U. S. Public Health Service; Albert D. Ruedemann, Cleveland; Harold F. Falls, Ann Arbor, Mich.; Raymond G. Ingalls, Berlin, N. H.; Milton L. Berliner, New York; David G. Cogan, Boston; Paul A. Chandler, Potomac; Eugene M. Blake, New Haven, Conn.; and James S. Shipman, Camden, N. J.



## GENERAL

**Reduction in Rabies Deaths**—There were 36 deaths from rabies reported for the entire United States in 1942, according to figures released by the Bureau of Census on November 16. The largest number of deaths from rabies in the last ten years was 80 in 1934.

**Pediatric Board Reopens Group I**—The American Board of Pediatrics, at its recent annual meeting, decided to reopen Group I, which requires that an applicant shall have been specializing in pediatrics for ten years or more. Group I will be kept open until July 1, 1944. When the organization of the board was completed in January 1934, Group I of the three authorized groups was to be kept open until September 1940, after which date examination was required.

**Dr. Cumming Receives Gorgas Award**—On October 22 the Gorgas Award of the Association of Military Surgeons of the United States was presented to Hugh S. Cumming, surgeon general, U. S. Public Health Service, retired, and at present director of the Pan American Sanitary Bureau. The award was founded in 1942 by John Wyeth and Company of Philadelphia and consists of a medal and scroll and \$500. It is given each year to some member of the association who has made notable contribution to medical science of value to the military service.

**Inter-American Conference for Professional Education in Public Health**—The Inter-American Conference for Professional Education in Public Health has been permanently organized. The first meeting was in the form of a conference of representatives of the schools of public health in the South, Central and North American countries at the University of Michigan School of Public Health, Ann Arbor, November 8-11 (THE JOURNAL, November 6, p. 646). The next meeting of the conference will be held in São Paulo, Brazil, in 1945. There are no officers designated, the sponsors of the conference being the Pan American Sanitary Bureau.

**Mead Johnson Prizes**—At the meeting of the American Academy of Pediatrics in Chicago, November 6, the 1943 recipients of the Mead Johnson awards were announced. First prize of \$500 went to Dr. Hattie E. Alexander, New York, for her work on 'The Treatment of the H. Influenzae Infections,' and second prize of \$300 to Dr. Philip Levine, Newark, N. J. for his work on "Erythroblastosis Fetalis and the Rh Factor." At the meeting Dr. Joseph S. Wall, Washington, D. C., was named as president-elect of the academy and Dr. Franklin P. Gengenbach, Denver, was installed as president. Dr. Clifford G. Gruice, Evanston, Ill., was reelected secretary-treasurer.

**Dr. L. N. Upjohn Relinquishes Presidency of Company**—Dr. Lawrence N. Upjohn, since 1930 president of the Upjohn Company, Kalamazoo, Mich., will on January 1 become chairman of the board of directors, relinquishing the presidency of the company. Donald S. Gilmore, vice president and general manager of the company, will become president. Dr. Everett Gifford Upjohn, who has been with the company since 1931 and is now medical director, will continue in the latter position in the new post of vice president. Harold S. Adams, Ph.D., who joined the company in 1926 and has been general superintendent, is vice president and director of production. Dr. Lawrence Upjohn has been with the company since 1904 and was for twenty-five years in charge of the New York office.

**New Journal on Allergy**—The *Annals of Allergy*, published by the American College of Allergists, recently made its appearance. Dr. French K. Hansel, St. Louis, is editor-in-chief. The editorial board includes a staff of corresponding editors from fifteen foreign countries and the United States possessions and is composed of specialists who have made some personal contributions to the field as related to their own particular specialty, internists, otolaryngologists and ophthalmologists, pediatricians, dermatologists, gastroenterologists, immunologists, bacteriologists (mycologists), pharmacologists, biochemists, botanists, plant pathologists and others. The college was incorporated in November 1942, and its objectives are to supplement the work of existing allergy groups as well as to "emphasize and consider numerous phases of the subject heretofore overlooked." Dr. Frederick W. Wittich, Minneapolis, is secretary of the college.

**Pharmaceutical Manufacturers' Award Goes to Work on Penicillin**—On December 13 the American Pharmaceutical Manufacturers' Association, at its meeting at the Waldorf-Astoria, New York, will present its annual scientific award in absentia to Dr. Alexander Fleming, professor of bacteriology, University of London, for his discovery of penicillin and to Dr. Howard Walter Florey, professor of pathology, Oxford University, for his study of penicillin. The presentation of the

award will mark the opening of a two day session of the American Pharmaceutical Manufacturers' Association. Speakers will include:

Norman T. Kirk, surgeon general of the U. S. Army, Army War Medicine  
Warren F. Draper, assistant surgeon general, U. S. Public Health Service, Civilian War Medicine  
Dr. Chester S. Keefer, Boston Research in War Medicine  
Dr. Oliver H. Perry Pepper, Philadelphia, Medicine in War and After  
Charles Thom, Ph.D., Washington, D. C., Mold Research in War Medicine  
Dr. George A. Harrop, New Brunswick, N. J., Pharmaceutical Development of War Medicine  
Lieut. Col. Howard T. Currie, M. C., U. S. Army, Army Medical Purchasing Office  
Lieut. Col. Ralph R. Patch, U. S. Army, War Manpower  
Major E. P. Platt, U. S. Army Surplus Government Drug Stocks  
Wendell Berge, S. J. D., Washington, D. C., Significance of Antitrust Law in Postwar Period  
Dr. Thomas A. McGoldrick, Brooklyn, N. Y., Problem of Essential Medical Care  
Mr. A. C. Nielsen, Chicago, War Impact on Drug Distribution  
Mr. Charles W. Dunn, New York, general counsel of the association, Postwar Observation

**Frequency of Stillbirths**—For over 100 babies born alive, 3 are stillbirths, according to the *Statistical Bulletin* of the Metropolitan Life Insurance Company, official records showing that there are about 75,000 stillbirths in a year in the United States, a much larger number than deaths from tuberculosis in the general population. The bulletin points out that in reality the number of stillbirths exceeds the official total because many are not reported. The report states that the frequency of stillbirths is least in the age period 20-29, in which childbearing is heavily concentrated, a fortunate circumstance because practically three fifths of all mothers are within these ten years of life, it was stated. Among women who are having their first baby at the age of 45 or over there are more than 13 stillbirths for every hundred live births. On the other hand the frequency of stillbirths is also high among women who have already had a large number of children. In discussing the situation the *Statistical Bulletin* points out that an adequate program of antepartum care for pregnant women in industry would be a valuable aid in saving lives, commenting that a number of industrial plants have already taken steps in this direction. The ratio of stillbirths to live births has been reduced by nearly a fifth in the past decade, but in the need for improvement it is pointed out that many stillbirths could be prevented by the adequate treatment of syphilitic mothers early in pregnancy, the estimate being that at least three fifths of these pregnancies end in stillbirth. The bulletin states that "while a number of stillbirths result from biological factors, such as the aging of the mother, there is no doubt that many arise out of causes amenable to control, and it should be possible to reduce the frequency of stillbirths by expanding and coordinating prenatal services. Many stillbirths in which the child's life is destroyed during labor could have been prevented by better obstetrical care."

## LATIN AMERICA

**Health Activities in Latin America**—As the result of a conference of interested health and other officials in June, the organization of a project in Brazil to care for the health of migratory workers in the Amazon region is under way. Hospitals will be maintained at Belem and Manaus, as the camps at other localities in the district would be too small to justify the establishment of medical posts. Not all the localities to which laborers are to be sent have been determined, but they are being chosen for their value from an agricultural point of view. The migrant camp at Coroata was discontinued during July and another camp established at Camas because of greater transportation facilities available in the latter city. Medical districts were opened during June at Abaete, Orizimina, Labrea, Vila Seabra and Sena Madureira.

**Exchange Fellowships**—Under a two way exchange fellowship program sponsored by the Institute of Inter-American Affairs in Washington, more than 30 United States doctors have received special training in tropical medicine at Central American hospitals, with 40 more to train before this phase of the program is completed. The program is providing 120 doctors from Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Panama, Paraguay, Peru and Venezuela, with the opportunity to complete specialized studies in the United States. Many have finished their training, others are now studying and more are to begin their work. The group is particularly interested in studying advanced techniques in cancer, tuberculosis, venereal disease, nutrition, blood banks, heart disease, public health nursing and sanitary engineering. The Inter-American health and sanitation program resulted from recommendations made at the Conference of American Foreign Ministers in Rio de Janeiro in January 1942.

**Quinine**—The Brazilian government is planting cinchona trees experimentally in the state of São Paulo and other mountainous areas in southern Brazil to develop an American supply of quinine. If the experiment is successful, large scale plantings will be carried out so that the Americas will never again have to depend on quinine from sources that might be cut off.

**Personal**—Dr Roberto Souza Coelho Coelho, director of the Pastur Institute of Rio de Janeiro, is in the United States to spend a month of study at the Rockefeller Institute for Medical Research, New York after which he will pursue work in Washington and Montgomery, Ala. where studies on hydrophobia are being made.—Dr Charles E. Shepard has been named chief of the personnel training and health education section, a new division of the Health and Sanitation Division brought about by combining health education activities in the special activities section with those of the personnel training section.—Dr Guillermo C. Paterson Buenos Aires first president of the Jujuy Branch of the Sociedad Argentina de Patología Regional, recently completed fifty years in the practice of medicine all of which have been spent in Argentina.—Dr George Brecher, formerly of Olomouc Czechoslovakia, and recently a fellow in pathology at the Mayo Clinic Rochester, Minn., will engage in public health service in Haiti with residence in Port-au-Prince, under the joint auspices of the Haitian and United States governments.

**Yaws**—A new health program has been undertaken in Haiti designed for the control and elimination of yaws. The project includes a new clinic at Jacmel, where as many as 1,700 patients have been treated in a single day. Some of the patients walked 20 miles to obtain attention from the 12 Haitian physicians and nurses who staff the clinic. Dr James H. Dwindelle, specialist in skin diseases, has been assigned by the Health and Sanitation Division to cooperate with Haitian authorities in combating the disease. It is hoped to control yaws in the areas around Gressier and Jacmel before starting similar programs in such zones as Marigot, Saltrou and Grand Gosier.

**Malaria**—The first permanent malaria control project in Honduras was started on April 15, 1942 in Choluteca, this city being chosen because of its important location on the Pan American Highway. In addition a number of temporary control projects have been instituted in Tegucigalpa, Amapala and Trujillo.

**New Construction**—In Honduras new construction includes health centers in Tegucigalpa and Choluteca serving respectively populations of 50,000 and 5,000.—A new cancer clinic was opened in Guadalajara, Mexico during the first Mexican Cancer Congress, held there recently. A recommendation for the organization of a National Institute of Cancer was made at the congress, as was the announcement that a nationwide drive against the disease would be started.

**Nursing**—A general program has been instituted throughout Latin America, including the building up of service, the provision of fellowships and nursing education. In Brazil a new school of nursing will be established in São Paulo to work in connection with the faculty of medicine and the new 1,200 bed hospital De Clinicas, under the supervision of the São Paulo state government. Nurses' residences, classrooms and laboratories will be constructed. Equipment and installation for the buildings will be provided by the public health department of the state of São Paulo and the Rockefeller Foundation has undertaken supervision of the curriculum and course of studies. Thirty-seven students have been enrolled for the first class, the majority of whom are normal school graduates. The recruitment of students is being undertaken in other parts of Brazil to fill the first class to its capacity of ninety students. Thirty scholarships have been provided. A new national school of nursing has been established in Bogota, Colombia, by presidential decree, to be an entity within the Ministry of Labor, Hygiene and Social Welfare. It is expected that this project will be completed in 1945. A remodeled ministry building, to be available in 1944 will temporarily house the fifty first year students. A national school for nurses was set up in Quito, Ecuador in 1942, and the development of an existing school in San Salvador, El Salvador, is under way.

**Society News**—The second Mexican Congress of Pediatrics will be held in Mexico, D. F. March 26-April 1, 1944. Officers are Drs. Mario Torrella, Federico Gomez S. and Hermilo L. Castañeda who are respectively president, vice president and secretary of the committee of organization. Topics to be discussed will include colitis in children, Mexican eutrophic children, hygiene and medicosocial care for rural children and the normal X-ray appearance of the thorax of Mexican children.—The first Peruvian Congress of Protection to Childhood took place in Lima during July.—The fifth Argentine Congress on Obstetrics and Gynecology was held in Buenos Aires, October 3-8. Among the speakers were Drs. Manuel Aviles,

Chile, Emilio Argonz, Rosario, Maria M. Fabiao Rio de Janeiro, Alberto Peralta Ramos, Buenos Aires, Juan Pou Orfila, Montevideo, Humberto Dionisi of Cordoba, Claudio Goulard de Andrade, Rio de Janeiro and Juan A. Salaber, Buenos Aires.—The seventh Argentine Congress of Medicine met at La Plata City, November 12-21. The session was divided into sections on neurology and psychiatry, legal medicine and toxicology, ophthalmology and general pathology and pathologic anatomy.

## FOREIGN

**Dr. Max Neuburger Observes Seventy-Fifth Birthday**—Dr. Max Neuburger, formerly professor of the history of medicine at the University of Vienna and since 1939 associated with the Wellcome Historical Medical Museum in London, observed his seventy-fifth birthday, December 8. Frequently referred to as dean of medical history, Dr. Neuburger was the founder of the Institute for Medical History and Museum at the University of Vienna.

**Personal**—Dr. Harry Guy Dain, Birmingham, on September 23 was unanimously elected chairman of the Council of the British Medical Association, succeeding Dr. Henry S. Souttar, London (THE JOURNAL, February 13 p. 533).—Mr. H. H. Gerrans has been appointed secretary of the Royal Institute of Public Health and Hygiene, London. Mr. Gerrans is a fellow of the Chartered Institute of Secretaries.—Dr. Charles Singer, who recently retired, has been made professor emeritus of the history of medicine in the University of London.

**Grant Enables Maltese Physicians to Study in England**—The Nuffield Foundation, London, has awarded grants to enable six Maltese physicians to take specialized training in Great Britain in tribute to the courage of the people of Malta. The physicians chosen will be trained for the positions of orthopedic or assistant orthopedic surgeon, radiologist, tuberculosis officer, medical officer for the civil prison and reformatory and two infant welfare officers. Grants will be tenable for a maximum period of two years and will amount to \$1,600 a year for single and \$2,400 for married physicians, plus traveling allowances. Recipients must return to the island at the end of their training.

## Government Services

### Portrait of Carl Voegtlin

At a recent meeting of the National Advisory Cancer Council a portrait of himself was presented to Carl Voegtlin, Ph.D., who recently resigned as director of the National Cancer Institute of the U. S. Public Health Service (THE JOURNAL, June 26, p. 631).

### Public Health Service Reorganized

Thomas Parran, surgeon general of the U. S. Public Health Service, has announced the names of five persons to head the new bureaus and divisions set up through the reorganization of the U. S. Public Health Service by Congress November 11. The reorganization was authorized in the enactment of a bill (S. 400). Dr. Lewis R. Thompson, medical director serving in the surgeon general's office, has been named assistant surgeon general in charge of the new Bureau of States Services. Dr. Ralph C. Williams, formerly district director with headquarters in New York, has been named assistant surgeon general in charge of the new Bureau of Medical Services. Dr. Rolla E. Dyer, director of the National Institute of Health, Bethesda, Md., will in addition serve as assistant surgeon general in charge of the new Bureau of Scientific Research. John K. Hoskins, senior sanitary engineer, under the new setup will become chief of the division of sanitary engineering and William T. Wright Jr., D.D.S., chief of dental work in the Marine Hospital Division of the public health service will become chief of the division of dentistry. All five will hold ranks comparable to an army brigadier general, it was announced. They have been in a grade comparable to a full colonel in the army. Mr. Hoskins is said to be the only non-doctor or dentist to hold a rank in the public health service comparable to brigadier general. S. 400 provides that the surgeon general of the public health service under the supervision and direction of the Federal Security Administrator is authorized and directed to assign to the Office of the Surgeon General to the National Institute of Health and to the Bureau of Medical Services and the Bureau of States Services, the functions of the public health service and to establish within the office of the surgeon general and the other groups named such divisions, sections and other units as may be required to perform their functions.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct 30, 1943

#### The Decline of Population

Prof. A. V. Hill, physiologist, has published a curve in the *London Times* showing an imminent decline in the population of England and Wales. For simplicity, statistics on women between the ages of 20 and 40 years are used, this provides a good index of the total number available for child bearing. The curve shows a maximum population of about 6¼ million such women now and a gradual fall to less than 5 million in 1970. Up to 1931 the actual numbers for the census years 1901 to 1931 are used. After that, estimates supplied by the Population Investigation Committee are taken. All the women shown in the projected curve up to 1963 have actually been born, and their numbers can be affected only by drastic alterations in death rate, emigration or immigration. Even for 1970, two thirds of them are already born. Therefore no change in the rate of reproduction which can reasonably be expected in the next seven years can affect the curve much up to 1970.

Professor Hill thinks that there is no evidence that physiologic fertility has altered significantly in the present century. A downward trend, increasingly apparent since 1900, is almost certainly due to a variety of other causes. The immediate cause, he thinks, may have been a general realization of the possibilities of birth control acting and reacting with a number of other factors such as social custom, economic and industrial conditions, housing and education. Some experts regard the downward trend as a passing phase and think that after 1965 it will be reversed. But, according to Professor Hill, they do not realize the momentum of these changes. The present slight rise in the birth rate is used to justify complacency, but it is mainly due to abnormal causes such as younger marriages anticipating future births, the emotional influence of the war and others of a similar nature.

For the maintenance of our population, Professor Hill prescribes three things: (1) a keener and more generous recognition of motherhood as an honorable duty and occupation, (2) adequate children's allowances and (3) the deliberate introduction in all impending social, industrial, housing and educational programs of a definite bias in favor of happier, healthier and more efficient mothers and more and better children. Thus, he believes, though we cannot prevent the fall in population indicated in the curve to 1965, we may make the curve turn upward after that.

#### The Efficiency of the Army Medical Service

The war correspondent of the *Daily Telegraph*, Douglas Williams, assures relatives of men serving in the Mediterranean area that nothing has been left undone in the care of the sick and wounded and that no expeditionary force has ever had such good medical protection. The contrast with the last war is remarkable. Of 400 operations performed recently in a battle zone after a beach assault, less than 1 per cent proved fatal. At base hospitals the mortality has fallen as low as 1 or 2 per thousand, compared with 5 to 10 per cent in the last war. Malaria is prevalent, especially in Sicily and Italy at this time of year, and has caused much sickness, but atabrine has reduced the mortality in some areas by as much as 70 per cent. Apart from this inevitable incidence of malaria, no field force has ever been healthier. Inoculation has produced immunity to tetanus, typhoid and typhus. Increasing use is being made of penicillin, which is giving astonishing results in the treatment of wounds and septicemia. A recent example was a

badly wounded, delirious soldier who arrived in Algiers by air from Italy. The penicillin team was immediately summoned by air from 300 miles away, and the man was about again in a fortnight.

Directing the medical service is Major Gen. E. M. Cowell, with Brig. Gen. Fred Blesse of the United States Army. In the combined and perfectly coordinated Anglo-American hospital organization no distinction is made as to nationality of patients. So well are the medical services organized close to the fighting line that almost as soon as a man has fallen medical care of some kind is available. In beach landings, tents staffed with surgeons arise like magic literally at the cannon's mouth. Blood transfusion is now brought up to the front line. In recent fighting many lives were saved by trained teams crawling forward to wounded men isolated in the battle area and administering transfusion on the spot. Supplemented by immediate surgery and rapid evacuation by air back to base hospitals, such methods have achieved wonders in forward areas.

So far this year nearly 50,000 sick and wounded have been evacuated from the battle zones over an average distance of 300 miles. From one air field alone 5,000 cases have been flown across the sea. Both the British and the United States armies maintain air evacuation units comprising doctors and nurses who accompany the men during the flight. Such aircraft are fitted as miniature hospitals, affording facilities for administering morphine, changing dressings and feeding patients. Entire field ambulance units equivalent to mobile field hospitals are also air borne, some even carrying jeeps fitted with stretchers. Parachute attacks are accompanied by surgeons and anesthetists who have passed special parachute courses. Mobile surgical teams composed of tough young specialists operate in advanced areas as far forward as possible. The supply of surgeons is much better than in the last war. There is one surgical team for every 2,000 fighting men. Side by side with the doctors, British and American nursing officers are doing magnificent work. In the Oran assault American nurses went ashore under fire and were splendid examples of courage.

#### The British Journal of Industrial Medicine

The *British Medical Journal* announces the publication commencing next January of an addition to the specialist journals published by the British Medical Association—the *British Journal of Industrial Medicine*. The project has often been discussed in recent years, and the final stimulus to action came in the shape of a formal request to the British Medical Association from the Association of Industrial Medical Officers. An editorial board was formed, and it was intended that Sir Henry Bashford, chief medical officer of the post office, would be editor in chief, but his recent appointment as medical adviser to the treasury prevents this. It is anticipated that Dr. Donald Hunter of the London Hospital will take his place. The other editors will be Dr. A. J. Amor, Dr. M. W. Goldblatt, Dr. D. C. Norris, Dr. Donald Stewart and Mr. R. W. Watson-Jones, a surgeon. The *British Medical Journal* says that since 1939 the country has been overwhelmingly conscious of the extent to which it owes its safety to the health of the worker in industry. Industrial medicine is not just industrial toxicology, in fact, this is but a small part of it. A whole range of problems faces the worker, the management and the doctor—the effect on the worker and his work of temperature and humidity, of the intensity and direction of illumination, of posture and change of posture, of rest pauses and recreation, of washing facilities, of canteens and of an efficient accident service. There are also the important psychologic problems of monotony, relations between foreman and worker, selection of work and so on. From industrial medicine a steady flow of observation and research is hoped for, and much of this should find an outlet in the *British Journal of Industrial Medicine*.

## BUENOS AIRES

(From Our Regular Correspondent)

Oct 15, 1943

### Maternal Mortality

Dr Carlos Roust recently reported the results of his studies on maternal mortality for the period 1901-1940 in the maternity ward of the Eliseo Canton clinic. There were 821 deaths out of the whole group of 61,684 deliveries. In 642 cases (78.19 per cent) death was due to obstetric causes. In 179 cases (21.8 per cent) it was the result of intercurrent diseases. Maternal mortality due to obstetric causes diminished from 22.16 per thousand in the decade 1901-1910 to 5.6 per thousand in the decade 1931-1940. The mortality from various causes in the first and fourth decades of the period were as follows: from infection following abortion and peritonitis following cesarean section, 6.17 per thousand in the first decade and 2.82 per thousand in the fourth; from puerperal infection, 2.53 in the first and 1.14 per thousand in the fourth decade. The main causal factor was toxemia in 85.71 per cent of all the cases. Hemorrhage, obstetric trauma and infection followed toxemia in order of importance. Nationality, living conditions and occupation had no relation to maternal mortality. Factors found to be important were the health and cultural level of the mother, incomplete pelvic presentation and infection from premature rupture of the membranes. About half the deaths occurred in primiparas, especially older primiparas. In the group of mothers who died, pregnancy was pathologic in 40.94 per cent of the cases and normal in 16 per cent of the cases.

The number of deaths among women with breech presentation diminished over the period. Artificial rupture of the membranes did not cause infection. There was a definite relationship between dystocia and surgical interventions and maternal mortality. Prolonged parturition was found to be dangerous for the mother. The safest delivery for mothers it was found, is that of normal duration. In cases of death from obstetric causes after delivery and during the puerperium, septicemia was observed in 46.55 per cent of the cases, toxemia in 19.18 per cent, trauma or shock in 19.18 per cent and obstetric anemia in 14.52 per cent. Death occurred during the puerperium in 90.03 per cent of the cases, during pregnancy in 4.36 per cent and during delivery in 5.6 per cent. Hemorrhage, shock or acute trauma during the first twenty-four hours following delivery were the most frequent causes of death after delivery or during the puerperium. Death from toxemia occurred, as a rule, within the first three days after delivery. Both maternal mortality and mortinatal mortality diminished during the four decades. The intercurrent diseases which caused death during pregnancy and puerperium were, in order of importance, acute pulmonary diseases, heart diseases, tuberculosis, diseases of the kidneys, acute peritonitis due to appendicitis, cancer and diseases of the liver.

### Brief Items

Scientific exchange courses between the United States and Argentina are being continued. Dr Oscar Ivanisevich, head of the surgical clinic of the Faculty of Medicine of Buenos Aires, will give his course in the surgical clinic at Stanford University in California, and Dr Leon Eloesser, head of the Stanford clinic, will give his in the Buenos Aires clinic and in the Instituto de Clinica Quirurgica del Hospital de Clinicas.

Two complete units of plastic surgery and anesthesia equipment were presented to the Institute of Clinical Surgery of the Faculty of Medicine of Buenos Aires by the British Council of London as a result of a suggestion from Sir Harold Gillies, who visited Buenos Aires in 1941.

The first Inter-American Congress was recently held in Buenos Aires. Dr Jose J. Merlo was the president. The following topics were discussed: Roentgenologic Diagnosis of Diseases of the Spine, Therapy and Result of Cancer of Breast, Roentgenologic Diagnosis of Intestinal Diseases and Teaching Roentgenology in the United States.

## AUSTRALIA

(From Our Regular Correspondent)

Aug 2, 1943 (delayed)

### Quinine Sensitivity

Troops serving in malarious areas are given quinine as a routine suppressive measure, the dose being from 5 to 10 grains (0.32 to 0.65 Gm.) of quinine bisulfate, depending on the malarial incidence in the area of service. Captain W. M. Rose (A. A. M. C.) describes 2 cases of quinine sensitivity, which is apparently rare. Each subject showed a local sensitization characterized by painful micturition, swelling of the penis and scrotum, and an erythematous eruption which was confined to the trunk and proximal portions of the extremities. The symptoms disappeared when the ingestion of quinine was discontinued. Neither patient had been in the tropics previously nor could either recall having taken quinine orally, but each man gave a history of a well defined local reaction following the use of contraceptive pessaries by his wife. On his coming into contact with the drug again the penis was the first part to be affected.

### Compulsory Chest Radiography to be Universal

It is probable that after the war compulsory radiographic examinations will be carried out on every Australian. This is one of the objectives under the social service health scheme now being prepared by the federal government for introduction later this year. Universal tests on the population are impossible during the war because of the shortage of radiologists and equipment. The government plans, however, to take over the radiographic equipment now being used by the army as soon as there is no further need for it for military purposes. The federal health minister (Mr. Holloway) hoped to make a start with school children, because medical experts considered that tuberculosis could be gradually eradicated if caught early. The health scheme should also include a separate pensions plan to maintain families of tuberculous bread winners so that family worries would not retard recovery.

### Relief for Civilian Medical Men

Wartime exigencies have placed a heavy strain on the civilian medical profession, and many doctors have found it impossible to take a badly needed rest because of the difficulty of obtaining a substitute. A welcome announcement in this connection was made recently by the air minister, Mr. Drakeford, to the effect that, where they could conveniently be spared from the service, Royal Australian Air Force officers would act as substitutes for civilian practitioners for periods up to fourteen days, or longer in special cases. The medical officers detailed for such duties would be selected according to the type of practice requiring relief, and allocations would be made from the most conveniently situated units to reduce traveling to a minimum. It seems likely that the scheme could be applied to a number of units of the fighting forces when doctors have to be on the strength of the units to meet active service conditions but could be spared for limited periods to render valuable assistance by relieving men in civilian practice.

## Marriages

ARTHUR LANKFORD JR. Rochester, N. Y., to Miss Harriet Campbell Whitehurst of Washington, D. C., November 16.

GEORGE B. SHARBAUGH, Statesville, N. C., to Miss Marie Field of Allentown, N. J., in Trenton, N. J., October 16.

THOMAS SPARROW LONG, Washington, N. C., to Miss Betty Martin Knox at Camp Bowie, Texas, August 14.

WILLIAM CLINTON MARETT JR., Seneca, S. C., to Miss Dorothy Henrietta Macaulay of Columbia, recently.

RODERICK C. WEBB, Jackson, Tenn., to Miss Martha B. Jaco of Booneville, Miss., May 29.

## Deaths

**Walter Wooten Council**, Juneau, Alaska, University of Virginia Department of Medicine, Charlottesville, 1905, commissioner of health, Alaska Territorial Department of Health since 1933, secretary-treasurer of the Alaska Board of Medical Examiners, member of the Territorial Medical Association and past president, member of the American Child Health Association and the American committee, International Congress of Industrial Accidents and Diseases, formerly vice president of the Conference of State and Provincial Health Authorities of North America, surgeon for the Copper River Railway and the Kennicott Copper Corporation, Cordova, Alaska, from 1911 to 1927, assistant surgeon, U S Public Health Service, from 1916 to 1927, formerly mayor of Cordova, at one time superintendent of the Cordova General Hospital, formerly president of the chamber of commerce, died November 13, aged 61.

**John Hahn Pratt** \* Manchester, N Y, Bellevue Hospital Medical College, New York, 1890, past president of the Ontario County Medical Society and the Seventh District Medical Society, recently a member of the Selective Service Board, examining physician for the eastern half of Ontario County during World War I, for many years a member of the board of education, vice president of the Frederick Ferris Thompson Hospital, Canandaigua, where he was a member of the attending staff, for many years a member and chairman of the board of directors of the Ontario County Trust Company and physician and surgeon for the Lehigh Valley Railroad, a director of the State Bank of Shortsville, died September 21, aged 78, of cardiovascular disease.

**William Robert Whiteis** \* Iowa City State University of Iowa College of Medicine, Iowa City, 1895, formerly assistant professor of histology, professor of histology and embryology, and clinical assistant to the chair of otology, rhinology and laryngology, professor of histology and embryology and assistant professor of gynecology, professor of obstetrics, professor of obstetrics and gynecology and head of the department and professor emeritus at his alma mater, at one time director of the University Hospital and past president of the staff, on the staff of the Mercy Hospital, member of the Rotary Club, died September 3, aged 74, of coronary occlusion.

**Andrew Raymond Amos**, Beverly Hills, Calif, Rush Medical College, Chicago, 1882, member of the Iowa State Medical Society, died September 17, aged 85.

**Herbert Taylor Aydlott**, Greensboro, N C, University of Virginia Department of Medicine, Charlottesville, 1894, member of the Medical Society of the State of North Carolina, died recently, aged 75.

**Marvin Oliver Brice**, Okemah, Okla (licensed in Oklahoma under the Act of 1908), member of the Oklahoma State Medical Association, formerly a druggist in Castle, died in the Wesley Hospital, Oklahoma City, September 7, aged 68.

**Amy Reams Davis**, Georgetown, Ill, Bennett Medical College, Chicago, 1915, died in the Lake View Hospital, Danville, September 28, aged 61, of chronic toxemia and chronic bronchitis.

**George Kendal Dazey**, Los Angeles, George Washington University School of Medicine, Washington, D C, 1920, served on the staff of the Santa Monica Hospital, died in the Good Samaritan Hospital September 30, aged 48, of carcinoma of the left lung.

**Henry Charles Mitchell De Wolfe**, Bramtree, Mass, Dalhousie University Faculty of Medicine, Halifax, N S, Canada, 1924, formerly associated with the U S Public Health Service, died in Boston September 1, aged 43.

**Thomas Embelton Hays** \* Burlington, Vt, University of Vermont College of Medicine, Burlington, 1911, served on the staff of the Green Mountain Sanatorium, died in Boston recently, aged 65.

**Alfred Baker Hender**, Davenport, Iowa, State University of Iowa College of Medicine, Iowa City, 1901, veteran of the Spanish American War, dean of the Palmer School of Chiropractic, died September 26, aged 69, of influenza complicated by bulbar paralysis.

**Roy Elwin Hunt**, Littlefield, Texas, University of Texas School of Medicine, Galveston, 1934, member of the State Medical Association of Texas, on the staff of the Littlefield Hospital and Clinic, was shot October 26, aged 36.

**Henry M Katz** \* Cedarburg, Wis, Wisconsin College of Physicians and Surgeons, Milwaukee, 1908, died in St Mary's

Hospital, Milwaukee, September 21, aged 59, of cachexia and carcinoma of the esophagus with perforation into the trachea.

**Edward Kellner**, New York, Medizinische Fakultät der Universität Wien, Austria, 1899, died in August, aged 69.

**Edward Rush King**, Ashdown, Ark, University of Tennessee College of Medicine, Memphis, 1915, member of the Arkansas Medical Society, served during World War I, died September 24, aged 51, of cerebral hemorrhage due to hypertension.

**Lawrence Victor Lee** \* Lattimore, N C, Atlanta (Ga) Medical College, 1894, member of the school board, died in the Shelby Hospital October 9, aged 72, of carcinoma of the stomach.

**Harrison Arthur Longdon**, Moberly, Mo, Meharry Medical College, Nashville, Tenn, 1908, city physician, died September 23, aged 61, of tuberculosis.

**Allen Walker Martin**, Bogalusa, La, University of Louisville (Ky) Medical Department, 1907, member and formerly vice president of the Louisiana State Medical Society, secretary of the Washington Parish Medical Society, health officer of Bogalusa, coroner of Washington Parish for four years, on the staff of the Elizabeth Sullivan Memorial Hospital, where he died October 6, aged 61, of hypertension and cerebral hemorrhage.

**Wayland Hogeboom Mason Jr**, Norwich, N Y, University and Bellevue Hospital Medical College, New York, 1931, member of the Medical Society of the State of New York, died September 7, aged 41, of tuberculosis of the lungs.

**William Ezra McCollom** \* Brooklyn, Columbia University College of Physicians and Surgeons, New York, 1903, chief attending physician and past president of the medical board, St Mary's Hospital, attending physician, Cumberland Hospital, died October 13, aged 63, of coronary thrombosis.

**Howard Stephen Miller** \* Taunton, Mass, Middlesex College of Medicine and Surgery, Cambridge, 1922, died in Hollis, N H, September 6, aged 55.

**Robert Copeland Mooney** \* Washington, D C, Albany (N Y) Medical College, 1908, member of the Medical Society of the State of New York, fellow of the American College of Physicians, heart and lung examiner in the medical corps of the U S Army during World War I, for many years served in the U S Public Health Service and Veterans Administration, medical consultant on the board of veterans' appeals, died in Worcester, N Y, October 4, aged 60.

**John Benjamin Morgan** \* Cleveland, St Louis University School of Medicine, 1910, member of the American Urological Association, vice chief of staff and director of urology, St John's Hospital, died September 7, aged 55, of coronary thrombosis.

**Saxton J Morgan**, Albany, Wis, the Hahnemann Medical College and Hospital, Chicago, 1892, served as a member of the school board and board of health, president of the Bank of Albany, died September 13, aged 78, of cerebral hemorrhage.

**Daniel Coleman Moseley**, Faunsdale, Ala, Medical College of Alabama, Mobile, 1888, member of the Medical Association of the State of Alabama, past president of the Marengo County Medical Society, formerly mayor of Faunsdale, died October 4, aged 76.

**Dale Oliver Nugent**, Centralia, Wash, University of Tennessee College of Medicine, Memphis, 1912, member of the Washington State Medical Association, president of the Lewis County Medical Society, formerly mayor of Centralia and state senator, died in St Vincent's Hospital, Portland, Ore, September 9, aged 59, of heart disease.

**John D'Arcy O'Brien**, Buffalo, University of Buffalo School of Medicine, 1904, member of the Medical Society of the State of New York, member of the child hygiene bureau, city department of health, on the staffs of Our Lady of Victory Hospital, Lackawanna, N Y, and the Mercy Hospital, died September 16, aged 64, of coronary embolism.

**William Monteith O'Bryan**, Greeleyville, S C, Medical College of the State of South Carolina, Charleston, 1911, died in the Kelley Memorial Hospital, Kingstree, September 30, aged 57, of acute nephritis.

**Anton F Ottrock**, Detroit, Detroit College of Medicine and Surgery, 1932, member of the Michigan State Medical Society, member of the staffs of St Francis Hospital, Hamtramck and St Joseph's Mercy Hospital, died September 11, aged 36, of injuries received when he was struck by an automobile near New Baltimore, Mich.

**Edwin H Paff**, Allentown, Pa, University of Pennsylvania Department of Medicine, Philadelphia, 1890, died September 16, aged 78, of aneurysm of the aorta.



**Emory Madison Paine** ♂ Grand Ledge Mich, Michigan College of Medicine and Surgery Detroit, 1896 on the staff of St. Lawrence Hospital, where he died October 6, aged 77, of carcinoma of the stomach

**Joseph Oscar Paul**, New Castle, Ind., Medical College of Indiana, Indianapolis, 1905, died September 30, aged 62, of injuries received in an automobile accident.

**Edward Robert Pelikan** ♂ Senior Surgeon, U S Public Health Service, Portland, Maine, University of Nebraska College of Medicine, Omaha, 1925 served during World War I, medical officer in charge of the U S Marine Hospital, where he died October 2 aged 48 of myocardial infarction due to coronary thrombosis

**Frederick Leander Peterson** ♂ Chewelah Wash, Northwestern University Medical School, Chicago, 1911, president of the Stevens County Medical Association, for many years treasurer of the Utah State Medical Association a captain in the medical corps of the U S Army during World War I, formerly on the staffs of the Dr W H Groves Latter-Day Saints Hospital and the Holy Cross Hospital, Salt Lake City, on the staff of St Joseph's Hospital died September 15, aged 64, of coronary embolism

**Frank Pike**, Hoboken, N J Southwest School of Medicine and Hospital, Kansas City Mo 1910, veteran of the Spanish-American War and World War I formerly senior ship's surgeon for the Holland American Line died September 29, aged 67, of heart disease

**Andrew Jackson Plumer**, Hysham, Mont Missouri Medical College, St Louis 1884, University of Pennsylvania Department of Medicine, Philadelphia 1885, formerly a member of the house of representatives and state senate died in Council Bluffs Iowa, September 16, aged 80 of carcinoma of the stomach

**Thomas Austin Poole** ♂ Washington D C, Baltimore University School of Medicine 1898 on the staff of the Episcopal Eye, Ear and Throat Hospital died in the Central Dispensary and Emergency Hospital October 5, aged 69

**Wiley V Powell**, Ridgecrest N C. University of Virginia Department of Medicine, Charlottesville, 1895, died in Morganton September 7, aged 75, of pneumonia.

**Francis John Pursell** ♂ Los Angeles Long Island College Hospital, Brooklyn 1899, veteran of the Spanish-American War, died September 16, aged 74, of lymphadenoma.

**Alvah Ramsey**, Norfolk, Va., University College of Medicine, Richmond 1899 for many years surgeon for the Norfolk and Western Railway, died in the Veterans Administration Facility, Kecoughtan, September 4 aged 66, of cirrhosis of the liver and heart disease

**Samuel Abram Riddick**, Norfolk Va University College of Medicine, Richmond, 1899 member of the Medical Society of Virginia, attending army surgeon at the port of embarkation, Newport News, from 1917 to 1919, on the staff of St. Vincent's Hospital, died September 9, aged 66, of tumor of the pancreas

**George Alexander Ritchie**, Appleton, Wis., Rush Medical College, Chicago, 1886, member of the State Medical Society of Wisconsin, on the executive staff of St. Elizabeth Hospital, where he died September 17, aged 85, of myocarditis

**Henry B Robbins** ♂ Jersey City, N J, University of Maryland School of Medicine, Baltimore, 1906, died September 7, aged 72, of carcinoma of the liver

**John Pierce Roberts**, Punxsutawney, Pa., College of Physicians and Surgeons, Baltimore, 1893, on the staff of the Locust Mountain State Hospital, Shenandoah, surgeon for the Susquehanna Coal Company, examiner for the New York Life Insurance Company and the Prudential Insurance Company, vice president of the First National Bank died September 27, aged 75, of embolism and coronary thrombosis

**Benjamin O Robinson** ♂ Parkersburg, W Va., College of Physicians and Surgeons, Baltimore 1904, past president of the West Virginia Public Health Council fellow of the American College of Surgeons for many years coroner of Wood County, on the staffs of the Camden-Clark Memorial and St Joseph's hospitals, died October 4, aged 64, of coronary thrombosis

**Reuben Artman Robinson**, Columbus, Ohio State University of Iowa College of Medicine, Iowa City, 1903 veteran of the Spanish American War, died September 19, aged 75, of coronary thrombosis

**Ned R Rodes**, Mexico, Mo Missouri Medical College, St Louis, 1893 member of the Missouri State Medical Association physician and surgeon for the Missouri Military Acad-

emy company physician for the Chicago and Alton Railroad and the Chicago, Burlington and Quincy Railroad; on the staff of the Audrain Hospital, where he died September 18, aged 75, of cerebral thrombosis

**Harry Elmer Rowland**, Johnstown, Ohio, Ohio Medical University, Columbus, 1901, member of the Ohio State Medical Association, died September 14, aged 72, of angina pectoris

**David Abram Rupert**, Detroit, Medical Department of the Western University of Pennsylvania, Pittsburgh, 1907, died in October, aged 58

**Harold Melvin Sachs**, Brooklyn, Temple University School of Medicine, Philadelphia, 1927, Long Island College Hospital, Brooklyn, 1929, member of the Medical Society of the State of New York, commissioned a captain in the medical corps, Army of the United States, June 26, 1942 and honorably discharged Aug 27, 1943, died October 7, aged 42, of coronary thrombosis

**Thomas Morton Sankey**, Wilkesburg, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1902, member of the Medical Society of the State of Pennsylvania, died September 13, aged 66, of cerebral arteriosclerosis

**Ernst Gustav Sasse** ♂ Lidgerwood, N D, Minneapolis College of Physicians and Surgeons medical department of Hamline University, 1899, county physician and city health officer, a member of the Lions Club and junior chamber of commerce, died September 15, aged 73, of cardiovascular disease

**Harvey Wesley Saylor**, Bruning Neb., Kansas City (Mo) Medical College, 1897, member of the Nebraska State Medical Association, past president of the Thayer County Medical Society, member of the village board of trustees, formerly member of the county board of health, died in St Joseph Hospital, Omaha, September 22, aged 71, of self-inflicted razor blade wounds

**Arthur Twing Schoonmaker**, Westfield, Mass., Hahnemann Medical College and Hospital of Philadelphia, 1894 served as a member of the local board of health, died August 30, aged 83

**Robert E Sevier**, Liberty, Mo University Medical College of Kansas City, 1890 member of the Missouri State Medical Association, formerly county coroner, county physician and health officer, died September 5, aged 83, of coronary occlusion

**De Witt Clinton Shaff**, Clinton Ind., Rush Medical College, Chicago, 1907, member of the board of education for twenty-two years, died October 7, aged 74, of heart disease

**James Riddle Sharp**, New York, University of Pennsylvania Department of Medicine, Philadelphia, 1890, member of the Medical Society of the State of New York, formerly visiting physician, outpatient departments Presbyterian and Manhattan Eye and Ear hospitals died in St. Luke's Hospital September 10, aged 76

**Cullom Sidwell**, Celina, Tenn University of Tennessee College of Medicine, Nashville, 1908, examiner for the Selective Service Board and county health physician, chief of emergency medical service, Clay County Defense Council, died in St. Thomas Hospital, Nashville, September 29, aged 69, of heart disease

**Otis Franklin Simonds** ♂ Cleveland, Medical School of Maine, Portland, 1909, member of the American Academy of Ophthalmology and Otolaryngology on the staffs of the Lutheran and St. Luke's hospitals died in the Lakewood (Ohio) Hospital September 26, aged 61, of coronary thrombosis

**C A Smith**, Stratford, Vt., University of Vermont College of Medicine, Burlington, 1895, died September 21, aged 78

**Jay LaVigne Smith**, Norcat, Kan. University Medical College of Kansas City, Mo, 1913, on the staff of the Norton Hospital, died September 25, aged 53, of coronary thrombosis

**William Cullen Squier**, Richmond, Ind., Eclectic Medical Institute, Cincinnati 1907, served during the Spanish-American War and World War I major, medical reserve corps U S Army, not on active duty, died September 1, aged 67, of myocarditis, arteriosclerosis and nephritis

**David Merner Staebler** ♂ Hackensack N J University of Toronto Faculty of Medicine, Toronto Ont., Canada 1885 member of the Medical Society of the State of New York formerly on the staffs of the Long Island College and Brooklyn hospitals, Brooklyn died September 11, aged 86, of coronary occlusion and coronary sclerosis

**George Kellogg Stephens** ♂ Newport, Ark., Washington University School of Medicine St Louis 1902 served on the city council and school board, died October 5 aged 64 of angina pectoris

Olen Clarence Stephens ⊕ Evansville, Ind, University of Louisville (Ky) Medical Department, 1915, served during World War I, formerly city physician, on the staffs of the Protestant Deaconess and St Mary's hospitals, died September 13, aged 57, of coronary thrombosis

Franklin Augustus Stevens ⊕ Belmond, Iowa, University of Buffalo School of Medicine, 1890, anesthetist on the staff of the Belmond Hospital since 1918, died September 17, aged 79, of carcinoma of the colon

Robert Cole Stickney, Beverly, Mass, Columbia University College of Physicians and Surgeons, New York, 1919, member of the New England Pediatric Society, for many years chairman of the board of health of Beverly, member of the staffs of the North Shore Babies' Hospital, Salem, and the Beverly Hospital, died September 7, aged 48, of ventricular fibrillation

Frank George Strayer, Oshkosh, Wis, Marion Sims College of Medicine, St Louis, 1894, died September 15, aged 73

Edwin Francis Sullivan, Gloucester, Mass, Kentucky School of Medicine, Louisville, 1905, died in Boston, August 22, aged 63

William Gordon Sutton, Sevensprings, N C, Jefferson Medical College of Philadelphia, 1889, member of the Medical Society of the State of North Carolina, past president of the Wayne County Medical Society, a member of the local school committee, died September 17, aged 82, of heart disease

James Thomas Taylor, Greensboro, N C, University of Maryland School of Medicine, Baltimore, 1908, member of the Medical Society of the State of North Carolina, past president of the Guilford County Medical Society and the Eighth District Medical Society, formerly on the staff of St Leo's Hospital, died September 27, aged 58, of carcinoma of the larynx

William Haynes Teeter, Bristol, Va, St Louis College of Physicians and Surgeons, 1899, member of the Medical Society of Virginia, on the staff of King's Mountain Memorial Hospital, died October 1, aged 72, of nephritis

Nathan Pulsifer Thayer, Brooklyn, Harvard Medical School, Boston, 1905, at one time medical superintendent of the Long Island Almshouse and Hospital, Boston, died in the Doctors Hospital, New York, September 18, aged 64

Charles L Thompson, York, Ohio, Ohio Medical University, Columbus, 1896, for many years president of the Mount Victory State Bank and the school board, instantly killed October 4, aged 72, when the automobile in which he was driving was struck by a train

Clarence Victor Thompson, Burlingame, Calif, Cooper Medical College, San Francisco, 1903, member of the California Medical Association, for many years chairman of the county board of supervisors, served as county health officer, on the staff of the Mills Memorial Hospital, San Mateo, where he died September 13, aged 62, of arteriosclerosis and coronary thrombosis

Charles R Truitt, Salisbury, Md, University of Maryland School of Medicine, Baltimore, 1891, for many years jail physician and health officer of Wicomico County, died September 7, aged 75, of chronic myocarditis and chronic diffuse nephritis

John Layton Tuttle, Clinton, Mich, Jefferson Medical College of Philadelphia, 1899, died in Lansing, September 3, aged 67

Edward Everett Twombly ⊕ Colebrook, N H, Eclectic Medical College of Maine, Lewiston, Maine, 1885, died August 21, aged 83, of carcinoma of the stomach

Earle Henry Tyson, Kansas City, Mo, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900, died in St Joseph's Hospital September 1, aged 69, of heart disease

Hassow Otto von Wedel ⊕ Ardsley, N Y, New York University College of Medicine, 1939, died October 10, aged 56 of a self-inflicted bullet wound

David Frederick Waide, New Orleans, Louisville (Ky) and Hospital Medical College, 1908, member of the Louisiana

State Medical Society, secretary-treasurer of the Second District Medical Society, died in the Southern Baptist Hospital September 14, aged 60, of generalized peritonitis, acute dilatation of the heart, perforation of sigmoid and intestinal obstruction

Aubrey Bradford Webster ⊕ Philadelphia, Boston University School of Medicine, 1902, clinical professor of surgery at the Hahnemann Medical College and Hospital of Philadelphia, member of the founders group of the American Board of Surgery, fellow of the American College of Surgeons, chief surgeon at the Broad Street Hospital, on the staffs of St Luke's and Hahnemann hospitals, died in Wynnewood, Pa, October 9, aged 67, of cerebral thrombosis

William E Weeks, New Orleans, Flint Medical College of New Orleans University, 1897, died in the Flint Goodridge Hospital of Dillard University September 5, aged 71

Edwin B Wells, North Lawrence, N Y, Albany Medical College, 1888, member of the Medical Society of the State of New York, died in the Potsdam Hospital October 4, aged 81, of coronary thrombosis

Reinhardt Charles Wende ⊕ Buffalo, University of Buffalo School of Medicine, 1924, diplomate of the National Board of Medical Examiners, served during World War I, on the staffs of the State Institute for Malignant Diseases and the Millard Fillmore Hospital, died October 15, aged 47, of acute pancreatitis

Charles R Wharton, Ruffin, N C, Medical College of Virginia, Richmond, 1897, for many years coroner of Rockingham County, chairman of the Ruffin township board of education, formerly county health officer, served as surgeon for the Southern Railway, died in the Memorial Hospital, Reidsville, September 19, aged 69, of injuries received in an automobile accident

Herndon White, Baltimore, College of Physicians and Surgeons, Boston, 1907, served during World War I, died in the Johns Hopkins Hospital, Baltimore, September 8, aged 68

Charles Forest Whiteshield ⊕ Trout Creek, Mich, Michigan College of Medicine and Surgery, Detroit, 1906, president of the Ontonagon County Medical Society, served during World War I, died in the Grand View Hospital, Ironwood, September 26, aged 80, of intestinal carcinoma

Walter Burns Williams ⊕ Argyle, Wis, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897, village health officer, died September 4, aged 71, of angina pectoris

Elza Levi Williamson, Calhoun, Ill, Denver College of Medicine, 1900, past president of the Richland County Medical Society, for many years president of the village board, formerly a member of the board of education, died in Olney, September 12, aged 65, of myocarditis

William A Young, Springfield, Ill, Washington University School of Medicine, St Louis, 1892, member of the Illinois State Medical Society, on the staff of the Springfield Hospital, now known as the Memorial Hospital, where he was a member of the consulting staff, for many years surgeon for the Baltimore and Ohio, Illinois Central and Alton railroads, presented with the medal of the Illinois State Medical Society for fifty years practice, died October 6, aged 73, of heart disease

### KILLED IN ACTION

James Douglas Blackwood Jr ⊕ Medical Inspector Commander, U S Navy, Drexel Hill, Pa, University of Pennsylvania Department of Medicine, Philadelphia, 1903, entered the U S Navy in December 1920, senior medical officer of the U S S *Vincennes*, Blackwood Drive on the reservation of the new U S Naval Hospital, Dublin, Ga., reserved in his honor by the Bureau of Medicine and Surgery, a new navy vessel will also be named for him, was killed in action in the Solomon Islands Aug 9, 1942, aged 60



COMDR JAMES D. BLACKWOOD JR.  
U S Navy, 1881-1942

## Correspondence

### ADOPTION OF THE METRIC SYSTEM

*To the Editor*—In the December 4 issue of THE JOURNAL was an article by the Council on Pharmacy and Chemistry on the use of the metric system. This is a most interesting article and I hope that it receives the attention it deserves. The metric system represents a standard which can be used and understood in every civilized country by every profession. It is one of the few scientific things that practically all professions can have in common.

As a civil engineer, I am in favor of the adoption in this country of the metric system in the engineering field. Experience in this and other systems in this country and in Central and South America, has convinced me that a country as great as ours cannot cling much longer to "horse and buggy" standards, especially now that we are rapidly assuming a leading place in international affairs. China is undoubtedly severely handicapped in this respect by the language of its ancestors, and in the same way our engineers and scientists have been handicapped by our traditional standards of mensuration, perhaps without realizing this fact.

On his first assignment to work in a foreign country an engineer not trained in the metric system is usually somewhat appalled at the prospect of having to work and think in unfamiliar units. It was my experience that this difficulty was completely overcome within one month, and thereafter it became as natural to speak of 6 meter subway platforms, 30 centimeter beams, and the like, as if it were my natural habit of thought. Others who have had the same experience will testify to the ease of using only the metric system.

The main advantage of the decimal metric system for calculation and construction layout purposes is its simplicity. This results in saving of time, reduction of sources of error, ease of checking and a presentation which can be universally read and understood.

In the drafting room plans must be made and dimensioned in units suited to the degree of accuracy required. Structural steel details customarily, except for bridge work, show dimensions to  $\frac{1}{16}$  inch, as this tolerance is large enough to permit easy fabrication and small enough to insure accurate fit in the field. In metric work all structural steel is dimensioned in whole millimeters. Reinforced concrete details are customarily in this country dimensioned to the nearest  $\frac{1}{4}$  inch, as this tolerance represents a practical degree of accuracy for form construction. In metric work all reinforced concrete is dimensioned in whole centimeters. If a drawing bears a note to the effect that all dimensions are in millimeters (or centimeters, as the case may be) no further designation of units is required and all dimensions appear as whole numbers. Lines of dimensions can be added by machine or by inspection in far less time than would be required for foot, inch and fractional inch designations, and with a greatly reduced chance for error. Calculations of diagonals or hip and valley dimensioning are effected by the use of standard tables of logarithms or even longhand, without recourse to special tables of logs and squares of foot and inch quantities. The chance of error through misreading or poorly written figures is reduced as foot and inch marks are not used, and fractions are eliminated entirely. Drawing scales are greatly simplified. Those in most common use are 1 to 100, 1 to 50 and 1 to 20, the scale indicating directly the proportion of the representation on the drawing to the full-size object.

Estimating of quantities is materially facilitated, as conversion constants are generally powers of 10 and the necessity for recourse to handbooks thus greatly minimized.

In structural calculations involving weights of materials the fact that a cubic decimeter of water weighs 1 kilogram and a cubic meter of water weighs 1 metric ton yields directly the unit weights of all materials, specific gravities known. Hydraulic calculations are a pleasure after one has wrestled with conversions of Imperial (or U S) gallons to cubic feet or vice versa.

In the field, surveyors and carpenters use the same units of measure for lines, grades and local measurements instead of constantly converting from feet and hundredths to inches and fractions, and back again. As a matter of fact, I have seen American engineers laying out complicated railroad work entirely in metric units without the slightest difficulty after a few days of adjustment to an entirely unfamiliar regimen.

Opposition to the adoption of the metric system on a universally compulsory basis has been vigorously presented by a small but effective minority ever since 1866, when the system was legalized in this country as an optional or permissive standard. A study of the nature of the testimony presented by the spokesmen for this vociferous group at hearings on the Britten bill in 1926 reveals, among other things, a tender solicitude [sic] on their part for the poor engineers, doctors and scientists who would be forced to recast their standards and modes of thought to the detriment of their professional efficiency. A study of the makeup of the opposition group, as far as identification of individuals has been possible, reveals a heavy proportion of business men, manufacturers and trade associations. Their arguments are not compatible with the common observation that engineers when forced to work in the metric system become such ardent partisans that it is difficult for them to give up its use.

In the next few years, opportunities for engineers to use only the metric system will increase. It is hoped that the question of compulsory metric standardization will again be brought to the fore. The engineering profession stands to gain as much as the medical profession from the general adoption of the metric system.

RICHARD JENNEY, C.E.,  
1401 Arch Street,  
Philadelphia

### USE OF FUADIN IN CREEPING ERUPTION

*To the Editor*—In the November 13 issue of THE JOURNAL, page 694, Dr. D. C. Smith reported on the "Treatment of Creeping Eruption with Fuadin." He stated that in the 1 case which he treated the lesions had disappeared by the time the fifth injection (of 2 cc each at daily intervals) had been given.

At the Station Hospital, Camp Livingston, Louisiana, we have an officer under treatment who was admitted on the 11th of October complaining of severely pruritic linear lesions (about 50 in number) on his trunk and extremities which had been present about ten days. He gave the history of having worked in the black soil under his home in Florida a short time before. A biopsy of one of the lesions revealed on serial section a cross section of one of the parasites, probably the dog and cat hookworm larva (*Ancylostoma braziliense*). On the 16th of October he began to receive injections of sodium antimony bisulfate (fuadin) intramuscularly. They were given three times a week, 5 cc each time. A total of ten injections were given. It was

thought at first that the pruritus was decreased, but it later became evident that the injections were not preventing the further spread of the lesions. With a luer lock syringe several cubic centimeters of the solution was injected intracutaneously, producing a huge wheal at the advancing edge of several of the lesions. This too was without value.

Other treatments which were used and also found to be of doubtful value were intracutaneous injection of 1:5,000 mercury bichloride in procaine solution, local application of 10 per cent ammoniated mercury, intravenous injections of maphrsen 0.04 Gm three times a week and occlusive dressings of ethyl acetate.

The best results were achieved by freezing a large area of skin surrounding the advancing edge of each lesion with ethyl chloride spray. However, this had to be repeated several times, and over the thick skin of the back the lesions were sprayed for as long as one minute forty-five seconds at a time.

It is hoped that this report of what is probably the second case of creeping eruption treated with fuadin will prevent any undue optimism in treating this stubborn disease.

HARVEY BLANK, First Lieutenant, M. C.,  
Dermatology Section, Station Hospital,  
Camp Livingston, Louisiana

#### ULCERATION OF THE FEET FOLLOWING SINGLE APPLICATION OF CAMPHOR- PHENOL MIXTURE

*To the Editor*—This is a report of another case of severe dermatitis of the feet with ulceration following the application of camphor-phenol mixture. This remedy, so ably popularized by Paul de Kruif, is still being used by the public on an "over the counter" basis with unfortunate results, as is illustrated by the following case.

A woman aged 30 was told that she had "ringworm of the feet" by her family physician. The eruption did not respond victoriously to the therapy prescribed by him on the first



Edema and ulceration of feet one week after single application of camphor-phenol mixture.

visit. On the advice of a "friend" she obtained "Phenolene," a camphor-phenol mixture prepared and sold "over the counter" at her local drug store.

She applied this preparation, which bore the usual warning signs "Poison" and "Do not apply to moist surfaces," to the interdigital areas of both feet. By the following day the feet

were swollen and painful. At the time of admission to the University Hospitals of Cleveland one week later there were bilateral edema and numerous deep ulcerations between all of the toes. These responded slowly to emollient local applications and rest in bed. The patient was in the hospital for thirteen days and totally disabled for twenty-seven or twenty-eight days.



Closeup of ulcerations.

Many work hours may be lost following ill advised applications of potent substances in the treatment of ordinary superficial mycosis of the feet.

WINTHROPE R. HUBLER, M.D., Cleveland

From the service of Drs. Cole and Driver

#### EARLY USE OF PENICILLIN (?)

*To the Editor*—Undoubtedly most of us think of the use of penicillin in the treatment of infections as a very new thing, but perhaps the appended quotation may indicate that penicillin was used in the treatment of wounds three centuries or more ago, although the physicians of the period naturally did not distinguish one fungous growth from another.

For the last four generations there has been passed along in our family *Theatrum Botanicum* by John Parkinson, Apothecary of London and King's Herbarist. This very voluminous work was published in London in 1640. In the fourteenth tribe of plants in which are included "marsh, water and sea plants with mosses and mushrooms" we find the following among the descriptions of the various tree mosses:

"Muscus ex cramo humano

"The Mosse upon dead mens Sculles. Let me here also adjoyne, this kind of mosse somewhat like unto the mosse of trees, and groweth upon the bare scalpes of men and women that have lyen long, and are kept in Charnell houses in divers Countries, which hath not onely bene in former times much accounted of, because it is rare and hardly gotten, but in our times much more set by, to make the Unguentum Sympatheticum, which cureth wounds without local application of salves, the composition whereof is put as a principall ingredient, but as Crollius hath it, it should be taken from the skulls or those that have bene hanged or executed for offences."

May it not well be that the alleged value of this moss as a wound dressing was due to the fact that in some instances the "moss" was a growth of *penicillium notatum*?

A. G. CRANCH, M.D.,  
Union Carbide and Carbon Corporation,  
New York

**Medical Examinations and Licensure****COMING EXAMINATIONS AND MEETINGS****NATIONAL BOARD OF MEDICAL EXAMINERS  
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Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Dec 4 page 928

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**Bureau of Legal Medicine  
and Legislation****MEDICOLEGAL ABSTRACTS**

**Workmen's Compensation Acts Compensability of Disability from Idiosyncrasy to Soap Required to Be Used in Course of Employment**—The workman instituted suit under the workmen's compensation act of New Mexico against his employer and the employer's insurer for an injury alleged to have been accidental and to have arisen out of and in the course of his employment as a printer. The trial court found that in the course of the workman's employment it was necessary that he cleanse his hands frequently with a "lava soap" furnished by the employer, that the employer furnished a soap known as "Lan-O-Kleen," which had a base of lanolin and corn meal, that the workman was highly allergic to Lan-O-Kleen soap and as a result of his continued use thereof in the course of his employment for six or seven months large painful eruptions broke out on the backs of his hands which developed to such an extent that on a stated date he became completely disabled. The court found that the use of Lan-O-Kleen would not have caused injury to the workman except for his allergy and that the resulting injuries constituted an unlooked for mishap which was neither expected nor designed and which was accidentally caused. Accordingly compensation was awarded the workman, and the employer and the insurer appealed to the Supreme Court of New Mexico.

The appellants contended, in effect, that the injury suffered by the workman was not a compensable "injury by accident" within the meaning of the New Mexico workman's compensation act. In *Stevenson v Lee Moor Contracting Co*, 45 N M 354, 115 P (2d) 350, said the Supreme Court, with respect to the phrase "injury by accident" this court said

We are satisfied with the conclusions of these courts and hold that injury by accident means nothing more than an accidental injury or an accident, as the word is ordinarily used. It denotes an unlooked for mishap or an untoward event which is not expected or designed.

We had reference there to the definition in Lord MacNaughton's opinion in *Fenton v Thorley* (1903) A. C. 443, by the House of Lords, in which he stated

I come therefore to the conclusion that the expression 'accident' is used in the popular and ordinary sense of the word as denoting an unlooked for mishap or an untoward event which is not expected or designed

"Accident" is defined by Webster as follows

A befalling an event that takes place without one's foresight or expectation an undesigned sudden and unexpected event chance contingency often an undesigned and unforeseen occurrence of an afflictive or unfortunate character casualty mishap

Lord MacNaughton's definition is substantially the same as that of Webster. It is obvious that the finding of the trial court brings the injury of the workman within the definition of "accident" as approved in the *Stevenson* case.

The employer and his insurer denied that the disability suffered by the workman was accidental because, so they contended, the so-called injury was not related to any specific time or event, a necessary fact to be found so they asserted to support a judgment in his favor. The New Mexico statutes answered the Supreme Court not only do not define the word accident but do not undertake to limit its meaning to "sudden injuries as do those of a number of the states nor is its meaning limited by any time test. Our statute is substantially the same as that of North Carolina, regarding which the supreme court of that state said in *McNally v Carolina Asbestos Co*, 206 N C. 568, 174 S E. 509

An examination of the Workmen's Compensation Act of North Carolina discloses many uses of the expression injured employee without the qualifying words "accident" or "by accident." So that unless we attempt to whittle down or enlarge words or undertake to put big threads through the eyes of little needles it would seem manifest that our act did not undertake to limit compensation to cases where the injury was



begin and completed within narrow limits of time, but that it used the expression injury by accident in its common sense everyday conception as referring to an injury produced without the design or expectation of the workman.

Accidental injuries, continued the court, are usually sudden happenings, and the time, event and circumstances can be definitely determined, but there are exceptional cases in which injuries are unquestionably accidental, although the precise time or their beginning is uncertain, such as those caused by breathing dust or gases, frost bite, slow poisoning, a series of slight injuries culminating in a serious one, etc. In determining whether there has in fact been an accidental injury, time ordinarily may be considered and may be decisive against the claim. But if from the evidence, though the time is not definitely fixed, it can be consistently said that there has been an accidental injury according to the common usage of that phrase it is sufficient. After all it is a question of accident or no accident, and the precise second, minute, hour or day that it occurred is but evidence to be considered with the other facts and circumstances of the case in deciding whether the injury was in fact accidental. True there must be a time when it can be said with certainty that a compensable accidental injury has been inflicted, but the cause, and the coming into existence of the evidence characterizing it as a compensable one, need not be simultaneous events. An injury may be gradual and progressive and not immediately discoverable, yet certainly and definitely progress to discovery and then to compensable injury. Such was the injury to the workman in this case. The time did arrive when his injuries totally disabled him so he could not work, and at that time he became entitled to compensation for total disability. The findings of the trial court do not advise us as to when the eruptions began to appear on the workman's hands, but we are informed that after the use of the soap for six months he had become totally disabled to perform any labor. In the beginning it may be assumed that the effect was not discoverable, but that it had some physiologic cumulative effect may be reasonably inferred from the fact that a continuous use caused the injury complained of. The injury to the workman was by accident, although it was produced gradually and progressively through a period of months. The court concluded therefore that the time of the injury was established with sufficient definiteness to warrant compensation under New Mexico statute.

employer and his insurer next contended that the injury the workman was not compensable because the workman was not subjected to any unusual or extraordinary condition or hazard not usual to his employment and to which other workmen on the job or the community generally were not subjected. In the *Stevenson* case, supra, said the court, we stated that there are three classes in which industrial injuries may be divided: (1) those injuries which result from some fortuitous happenings, such as the breaking of machinery, explosions, collisions, etc.; (2) those injuries in which there is no accident separate and distinct from the injury that caused it, such as strain which causes back injury, rupture, blood clots, hemorrhage, ordinarily the unintended result of an intentional act; (3) those injuries suffered by workmen to which they do not contribute by any specific act and which happen while they are in the performance of their usual and customary duties under usual, ordinary and expected conditions and circumstances, such as death caused by lightning, exposure to the elements and changing temperatures, sunstroke, breathing smoke, gas, fumes, dust, etc. The washing of the workman's hands was a necessary part of the labor for which he was employed. His injury, therefore, arose out of and was suffered in the course of his employment, and, if accidental, it was compensable. It comes under our second classification, an injury that was the unintended result of an intentional act, received while performing his labor under the usual and ordinary conditions of his employment.

The appellants questioned whether there could be an accidental injury while performing duties under the usual and ordinary conditions of the employment and contended that but few, if any, supporting authorities can be found for such a view.

It is true, said the Supreme Court, that there are cases which rest on the broad holding that an injury is not compensable as an industrial accident if it occurs while the workman is performing his labor under the usual and ordinary conditions of his employment, notwithstanding he may have suffered an accidental injury within the meaning of that phrase as popularly and ordinarily used. But by far the larger percentage of accidents occur while workmen are performing their labor under the usual and ordinary conditions of their employment. The cases which hold that there must be an accident, sudden and catastrophic in its nature, apart from the injury, regarding which the time, place and event can be definitely ascertained, also hold that such condition is supplied if there is something in the nature of the work itself that increased the hazard beyond that faced by other people in the same locality or not common to fellow employees, but that if the work was done with no unusual occurrence constituting a mishap or fortuitous happening and the laborer was working under the usual and ordinary conditions of his employment, then there would be no compensable accident. But on the other hand those courts which take a more liberal attitude toward the workman, whose decisions this court has followed, hold that the fact that the workman was or was not performing his labor in the usual and ordinary way is immaterial, if in fact there was an accidental injury suffered by him that arose out of, and happened in, the course of his employment. An injury resulting from unusual working conditions is usually held to be accidental, but there is nothing in the New Mexico compensation statutes that makes such condition (though there may not be an accident distinct from the injury) a necessary element of an accidental injury. Injuries often occur to workmen who have some physical condition or latent illness because of which the ordinary labor of the employment produces injuries that were not expected or designed, which would not have injuriously affected a well person. This court agrees with the Supreme Court of Washington in *Gules v Department of Labor*, 13 Wash (2d) 605, 126 P (2d) 195 in holding that "an accident arises out of the employment when the required exertion producing the accident is too great for the man undertaking the work, whatever the degree of exertion or the condition of the workmen's health."

Admittedly, continued the court, the workman's injuries in this case arose out of and were sustained in the course of his employment. His duties required him to wash his hands to prevent soiling the products of his labor. Except for his idiosyncrasy, it is true, he would not have suffered an injury, but the same may be said of a workman who, but for a defective physical condition, would have withstood the strain of his ordinary labors, yet suffered a compensable injury because of an exertion too great for one in his condition of health. Such are workmen who have heart afflictions, tuberculosis, etc., whose deaths result from strains or labor too heavy for their strength. As stated by the court of appeals of the fourth circuit in *Baltimore & Ohio Railway Company v Clark*, 59 F (2d) 595, the statute

says nothing about unusual or extraordinary conditions [of employment] that he [the workman] may have been rendered more readily susceptible to injury than they [other workmen] were by reason of his physical condition cannot affect the matter.

Lava soap was a poison to the workman, and his injury was compensable.

The judgment of the trial court in favor of the workman was accordingly affirmed—*Webb v New Mexico Pub Co*, 141 P (2d) 333 (N Mex, 1943).

## Society Proceedings

### COMING MEETINGS

Annual Forum on Allergy, St. Louis Jan 22-23 Dr Jonathan Forman,  
394 East Town St. Columbus Ohio  
Association for Research in Nervous and Mental Diseases, New York  
Dec 17-18 Dr Thomas E. Bamford Jr, 115 East 82d St, New  
York 28, Secretary  
Society of Surgeons of New Jersey Atlantic City, January 29 Dr  
Walter B. Mount, 21 Plymouth St., Montclair, N. J., Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### Alabama State Medical Assn Journal, Montgomery

13 93-128 (Sept.) 1943

Juvenile Delinquency in Its Relation to War Effort C P Taft—p 93

Treatment of Compound Fractures. H Gray—p 98

Veneral Disease Problem from Air Corps Standpoint G W Larimore—p 100

Anal Fistula W J Rosser—p 102

Environmental Sanitation and Postwar Planning T H Milford—p 107

13 129-156 (Oct.) 1943

\*Recent Advances in Treatment of Ruptured (Lumbar) Intervertebral Disks W E Dandy—p 129

Aviation Medicine B Groesbeck Jr—p 132

Suggested Treatment of Meningococcic Pneumococcic and Influenzal Meningitis with Special Reference to Sulfonamides S H Welch and Vera B Stewart—p 134

Constrictive Pericarditis. C Grote—p 141

**Ruptured Lumbar Intervertebral Disks**—According to Dandy spontaneous cures in cases of ruptured intervertebral disks are rare, although temporary remissions are the rule. There are two components of a ruptured disk: (1) the necrotic interior causing backache and (2) the protruding portion causing sciatica. The diagnosis of a ruptured disk is made solely from the signs, symptoms and x-ray examinations of the spine. Spinal injections of contrast mediums and spinal punctures are contraindicated, they are unnecessary and they will diagnose only one third of the total number. The small (concealed) disks outnumber the protruding ones two to one. They cannot be detected with spinal injections of contrast mediums. Two disks are involved in about 80 per cent of the cases, and occasionally there is a third ruptured disk. The exposure is unilateral and between the laminae without removal of bone (Love's operation) or, when the interlaminar opening is too small, the removal of a small bite of lamina may be necessary. Mobility of the vertebra, tested by pressure on the spinous process, will usually determine whether the disk is at the fourth or fifth lumbar (98 per cent are at these two disks) or at both. The entire necrotic content of the interior of the disk should be thoroughly removed with curets. This is the best insurance against recurrences. Fusion operations are unnecessary and are contraindicated. Fusion of the vertebrae occurs after removing the necrotic contents of the disk. The reason for the localization of 98 per cent of the lumbar disks to the fourth and fifth lumbar is probably due to a shift in the plane of the lateral articular processes from the horizontal to a transverse direction.

#### American Journal of Clinical Pathology, Baltimore

13 441-504 (Sept.) 1943

Carcinoma of Stomach. Prognosis Based on Combination of Dukes and Broders Methods of Grading G R Dochat and H K Gray—p 441

Pathology of Lymph Nodes. Diagnosis and Prognosis N A Murray and A C Broders—p 450

**Prognosis of Carcinoma of Stomach**—Dochat and Gray discuss two factors which influence the period of survival after operation for carcinoma of the stomach: the grade of malignancy of the lesion as determined by the method of Broders and the extent or spread of the lesion. They used the Dukes method of typing gastric carcinomas in combination with Broders method of grading the malignancy in an effort to determine the period of survival of a particular patient. They limited their study to the cases of gastric carcinoma in which operation was performed at the Mayo Clinic in the years of 1922 and 1934 inclusive. Only those cases were considered in which gastric resection furnished sufficient tissue to permit microscopic examination. In all they studied 1,251 cases. They designate

as type A lesions in which carcinoma involves only the mucosa and is not seen microscopically below the muscularis mucosae. Type B<sub>1</sub> lesions are those in which carcinoma extends from the submucosa into the muscularis and involves all or part of the stomach musculature, type B<sub>2</sub> lesions are those which have spread through the entire wall and have involved the serosa. Type C lesions include those in which there is metastatic involvement of the regional lymph nodes. All carcinomas studied were also graded according to the manner of Broders. The prognosis was found to be excellent in cases in which the lesion is either grade 1 or 2 or type A, B<sub>1</sub> or B<sub>2</sub>. In cases in which the lesion is grade 3 or 4 or particularly if it is type C the chance for postoperative survival is poor. Each of these methods when employed separately is inadequate for estimating accurately the period of survival. Combination of the methods is exceedingly useful. By using either of the methods alone, the tempering effect of the method not used is lost. The ideal conditions for treatment obtained in only 20 out of 1,045 cases, that is, in less than 2 per cent. In these cases the lesion was diagnosed early and removed promptly. Only 25 per cent of patients who come to the clinic because of a malignant lesion of the stomach undergo a gastric resection. The hospital mortality rate will be 16 per cent, and only 30 per cent of the remaining patients will live five years or more. Only 6 patients out of every hundred who have a malignant lesion of the stomach will live five years after the diagnosis is made.

#### American Journal of Ophthalmology, Cincinnati

26 1011-1134 (Oct.) 1943

Story of Red Cross Institute for Blind (1918-1925) in Relation to Present Problem of War Blind A C Woods—p 1011

\*Corneal Vascularization Problems D Vail and K W Ascher—p 1025

Intraocular Injection of Sulfanilamide in Case of Purulent Iridocyclitis J Igerbeimer—p 1045

Combined Ptosis Operation O H Ellis—p 1048

Procedures and Appliances That are Helpful in Treating Industrial

Ocular Injuries W B Clark—p 1044

Improved Technique for Implantation of Ball in Tenon's Capsule. F H

Verboeff—p 1057

Nonurgical Aspect of Ocular War Injuries F C Cordes—p 1062

Ocular Findings in Case of Periarteritis Nodosa. Case Report. I E

Gaynon and Mary Knight Asbury—p 1072

Summary of Findings at Eye Examination of Preparatory School Boys

A E Sloane and J R Gallaglier—p 1076

Visual Phenomenon Related to Binocular Tropia H M Burian

—p 1084

**Corneal Vascularization Problems**—Vail and Ascher compare their observations on the corneas of 711 patients seen in the Nutrition Clinic in Birmingham, Ala., during 1940 and 1941 and in the outpatient department of the ophthalmic department of the University of Cincinnati College of Medicine in 1942 with Sydenstricker's description of corneal vascularization caused by vitamin deficiency. They stress that concentric collaterals are engorged parts of the preexistent limbal meshwork. Any long standing engorgement in conjunctival vessels may induce formation of concentric collaterals. They probably are due to a hindrance of venous outflow from the immediately corresponding venous limb and are a kind of collateral circulation leading to the conjunctival veins in the horizontal meridian because of overcrowding in the original venous drainage. This cannot be achieved without dilatation of the particular loops that have to form the new detour. The dilatation of these vessels persists after disappearance of the provoking cause. In a similar way, after engorgement of lower degree or of shorter duration dilated single loops may be observed around the corneal limbus. They probably are forerunners of concentric collaterals and are as uncharacteristic of vitamin deficiency as are the developed concentric collaterals. The occurrence of engorged limbal loops and concentric collaterals in the Birmingham and in the Cincinnati patients was more frequent in the female sex and was distributed over all age groups. No relationship could be deduced between any particular type of vitamin deficiency and concentric collaterals. All Birmingham patients gave a history of repeated conjunctivitis or exhibited signs of it. Among 69 cases selected at random in the Cincinnati Eye Clinic there were 37 in which congestion was present in the limbal region 31 of which showed typical concentric collaterals. The female sex predominated in the positive group. The percentage was higher in white than in Negro patients. The nasal limbus was involved more often than the temporal limbus and the

upper limb more often than the lower limb. There was no relationship between the dietary habits and the frequency of vascular congestion in the limb region. The number of positive cases was higher in the good diet group than in the poor diet group. Even the number of bilateral cases was higher in the group of well nourished patients.

### American Journal of Physiology, Baltimore

139 667-768 (Sept) 1943

- Electrolyte Redistribution in Cat Heart and Skeletal Muscle in Potassium Poisoning. J. M. Crisman, C. S. Crisman, M. Calabrese and D. C. Darrow—p. 667
- Responses of Heart to Reflex Activation of Right and Left Vagus Nerves by Pressor Compounds Neosynephrin and Pitressin. H. F. Hancox, A. J. Lindgren, A. I. Karlens and W. B. Yonkins—p. 675
- Potassium and Cause of Death in Traumatic Shock. A. W. Winkler and H. E. Hoff—p. 686
- Effects Produced by Vitamin D on Energy, Appetite and Estrous Cycles of Rats Kept on Exclusive Diet of Yellow Corn. C. P. Richter and Katherine K. Rice—p. 693
- Effect of Dietary Changes on Urine Volume and Renal Function in Experimental Diabetes Insipidus. C. A. Winter, W. R. Ingram and R. C. Eaton—p. 700
- Observations on Polyuria Produced by Desoxycorticosterone Acetate. C. A. Winter and W. R. Ingram—p. 710
- Effects of Potassium Arsenite (Fowler's Solution) on Respiration and Glycolysis of Normal and Calcemic Tissues, with Observations on Action of Monodione (2 Methyl-1, 4 Naphthoquinone). C. O. Warren—p. 719
- Augmentation of Blood Flow in Coronary Arteries with Elevation of Right Ventricular Pressure. D. F. Grech, W. H. Pritchard, R. E. Shipley and J. T. Weir—p. 726
- Anterior Cardiac Veins: Their Functional Importance in Venous Drainage of Right Heart. D. E. Grech, R. E. Shipley and T. G. Bidder—p. 732
- Presence in Normal Urine of Cortinlike Material Which is Active in Muscle Work Test. R. A. Shipley, R. I. Dorfman and B. A. Horwitz—p. 742
- Comparison of Motor Integration in Mouse, Rat, Rabbit, Dog and Horse. R. Gesell and A. K. Atkinson—p. 745

### American Review of Tuberculosis, New York

48 205-278 (Oct) 1943

- Complications of Closed Intrapleural Pneumolysis. J. Goorwich—p. 205
- Empyema: Prophylaxis and Treatment. A. B. Dickey—p. 222
- Pneumonectomy in Pulmonary Tuberculosis. H. J. Lorge and P. Dufault—p. 229
- Cephalosporium in Pleural Fluid. R. Douglass and S. E. Simpson—p. 237
- Tuberculin Patch Test: Noncommercial. M. Grozin—p. 241
- Scheme for Numerical Recording of Tuberculous Changes in Experimentally Infected Guinea Pigs. W. H. Feldman—p. 248
- Promin in Experimental Tuberculosis: Comparative Results of Continuous and of Intermitent Treatment of Tuberculous Guinea Pigs with Sodium p,p'-Diaminodiphenylsulfone-N' Didextrose Sulfonate (Promin). W. H. Feldman and H. C. Hinshaw—p. 256
- Effects of Secondary Micro-Organisms on Experimental Tuberculosis in Rabbits. Part II. H. A. Poinexter—p. 261

**Prophylaxis and Treatment of Empyema**—Where pneumothorax is given for intensive, widespread tuberculosis, the incidence of empyema will be high. Tuberculous empyema is much more prone to occur in pneumothorax cases in which the collapse is mechanically unsatisfactory and in patients with tuberculosis who do not adhere strictly to the rest cure. Overexercise will aggravate tuberculosis of the pleura. The percentage of tuberculous empyema complicating artificial pneumothorax is given by authorities as from 10 to 15. Tuberculous empyema following closed intrapleural pneumolysis is not more frequent than in pneumothorax without pneumolysis. At the Arkansas Tuberculosis Sanatorium in 1941, closed intrapleural pneumolysis was done on 139 patients. To date, only 5 of these (3.6 per cent) have developed tuberculous empyema. This operation is responsible for some cases of empyema, but it prevents far more cases than it causes. The incidence of empyema following open extrapleural pneumolysis is considerable. In a series of twenty-four operations of this type, 9 patients (37.5 per cent) developed tuberculous empyema. The author has abandoned this type of operation except as a preparation for thoracoplasty. It should never be used for any other purpose. Tuberculous empyema responds at times to all accepted methods of treatment, but best results are obtained by obliteration of the pleural cavity, whether by aspiration and reexpansion of the lung or by extrapleural thoracoplasty. Mixed empyema must be treated by open surgical drainage. Unless the pleural cavity can be obliterated, the outcome is

almost always fatal, even after the empyema is drained. Sulfonamide therapy is of little or no value in mixed empyema. Persistent pleural effusion, tuberculous empyema and mixed empyema are stages in the same pathologic process. Tuberculous empyema can be largely prevented by resorting to closed intrapleural pneumolysis early. Where adhesions cannot be cut, pneumothorax should usually be abandoned.

**Pneumonectomy in Pulmonary Tuberculosis**—Lorge and Dufault report 3 cases of total pneumonectomy performed at the Rutland State Sanatorium in Massachusetts. In the first case a complete occlusion of a main bronchus was bronchoscopically visible. In the second, stenosis existed. In the third, no bronchial disease could be seen through the bronchoscope, but there was clinical evidence of repeated blockage of secretions. The symptoms of bronchial stenosis consisted of wheezing, retention of sputum, bouts of uncontrollable cough, fever and malaise, followed by profuse expectoration. These bouts occurred frequently and lasted from a few days to several weeks. When the development of bronchial stenosis and the accompanying symptoms of blockage created an intolerable situation there was no alternative but to permit the disease to continue its unfavorable course or to attempt extirpation of the lung on the side of the diseased bronchus. The authors concur with Alexander in regarding bronchial stenosis sufficient to cause partial blockage of the secretions and complete bronchial occlusion as the chief indication for pneumonectomy in tuberculosis. Their first patient developed a lesion in the contralateral lung in three months and died six months after the operation. The second patient, in whom a three rib thoracoplasty preceded the pneumonectomy, had a new lesion in the contralateral lung six months after the resection of the lung. In the third a pneumonectomy performed ten years after thoracoplasty has given satisfactory results.

### Annals of Otol, Rhin and Laryngology, St Louis

52 541-776 (Sept) 1943

- Penicillin and Tyrothricin in Otolaryngology: Based on Bacteriologic and Clinical Study of 118 Patients. S. J. Crowe, A. M. Fisher, A. T. Ward Jr and M. Kathleen Foley—p. 541
- Stimulation of Deafness. W. E. Grove—p. 573
- New Method for Treatment of Acute Aero Otitis Media. R. H. Wisheart—p. 581
- Interrelationship of Upper and Lower Respiratory Infections: Emphasizing Routes of Infection. J. G. McLaurin—p. 589
- Observations on Paranasal Sinusitis Among Patients Subjected to Lobectomy for Bronchiectasis. K. M. Simonton—p. 598
- Nonsurgical Aspects of Treatment of Acute Laryngotracheobronchitis. H. L. Baum—p. 608
- Acute Thyroiditis in Relation to Deep Infection of Neck. D. Higbee—p. 620
- Supplementary Report on Extralaryngeal Arytenoidectomy as Relief for Bilateral Abductor Muscular Paralysis of Larynx. J. D. Kelly—p. 628
- Some Aspects of Emergency Plastic Surgery in War Injuries of Face. J. M. Converse—p. 637
- Röntgen Therapy of Laryngeal Tuberculosis. C. W. Engler—p. 655
- Sound Transmission Through Ear and Its Relation to Sound Injury. F. M. Grossman—p. 666

**New Treatment of Acute Aero Otitis Media**—According to Wisheart, aero otitis media is a common ailment among flying personnel, especially during the season of acute upper respiratory infections. The condition can be effectively treated by the Proetz displacement method. The nasal mucosa is shrunk by application of a suitable vasoconstrictor solution, such as 2 per cent ephedrine sulfate in isotonic solution of sodium chloride. When shrinkage has been accomplished, the patient is instructed to clear the nose by gentle blowing. He is placed on his back in such a way that the head is inverted so that the chin and the external auditory meatuses are in the same vertical plane. While the patient is quietly breathing with his mouth widely open, 3 cc of a weak vasoconstrictor, e.g. 0.5 per cent ephedrine sulfate in isotonic solution of sodium chloride, is slowly introduced into the upper portion of each nostril, covering the eustachian orifices in the nasopharynx. Negative pressure (approximately 180 mm. of mercury) is then applied intermittently to one nostril by means of the displacement syringe, while the operator's finger closes the other and the patient closes the pharynx by saying "kay" or "cake." This procedure is repeated for six fluctuations to each nostril and the patient is allowed to sit erect. After ten minutes to allow the vasoconstrictor sufficient time to shrink the nasopharynx—

geal tissues the same instillation suction procedure is repeated. Usually during this maneuver the patient feels the vacuum release and he will be able to open the ear at will. In the beginning of this treatment fliers with aero otitis media were kept grounded for not less than six days in spite of their apparent improvement or cure. Later Navigation Cadets were grounded for only twenty-four hours provided the ear drum had returned to normal and the Weber test indicated the removal of the obstructive deafness. More recently, pilots have been allowed to return to flying even as soon as six hours after treatment.

### Annals of Surgery, Philadelphia

118 489-760 (Oct.) 1943 Partial Index

- Management of Ulcers Among Naval Personnel W Walters and H R Butt—p 489
- \*Effects of Pedicle Grafts of Jejunum in Wall of Stomach on Gastric Secretion Experimental and Clinical Studies W D Andrus J W Lord Jr and P Stefko—p 499
- Gastric Histology and Subtotal Gastrectomy A J Gitlitz and R Colp—p 523
- \*Effect on Gastric Acidity of Gastroenterostomy and Gastric Resection for Peptic Ulcer G J Heuer and C Holman—p 551
- Cholecystoenterostomy Cholechoenterostomy and Enterostomy by Means of Rubber Bands Use of Rubber Bands in the Mikulicz Operation J S Horsley and C W Horsley—p 558
- Some Physiologic Problems in Surgery of Pancreas L R Dragstedt—p 576
- Recognition and Management of Acute Trauma to Pancreas with Particular Reference to Use of Serum Amylase Test H C Naftziger and H J McCorkle—p 594
- Total Pancreatectomy for Carcinoma Case Report. E W Rokey—p 603
- Experimental Studies on Peritoneal Adhesions Fourth Report—Sulfonamides With and Without Heparin F Boys and E P Lehman—p 612
- Changes in Brain Volume and Blood Content After Experimental Concussion J C White J R Brooks J C Goldthwait and R D Adams—p 619
- War Wounds of Central Nervous System W M Craig—p 635
- Recent Advances in Treatment of Ruptured (Lumbar) Intervertebral Disks W E Dandy—p 639
- Acute Putrid Abscess of Lung VII Relationship of Technic of One Stage Operation to Results H Neuhof and E Hurwitz—p 656
- Choice of Operation for Delayed and Union of Long Bones. J A Key—p 665
- \*Thyrocardiac Disease Review of 614 Cases F H Lahey L M Hurxthal and R E Driscoll—p 681
- Skin Removal in Radical Breast Amputation J S Rodman—p 694
- Pilonidal Cysts and Sinuses F C Shute Jr T E Smith M Levine and J C Burch—p 706
- \*Thrombosis and Embolism Review of 202 Patients Treated by Femoral Vein Interruption A W Allen R R Linton and G A Donaldson—p 728

**Effects of Grafts of Jejunum in Stomach on Secretion and Ulcers**—Andrus Lord and Stefko demonstrated in dogs that a pedicle graft of jejunum implanted in the stomach wall produces profound effects on the gastric secretion. These effects consist in a reduction of the fasting free acidity and a diminution, or actual reversal, of the normal response of the gastric acidity to such secretory stimulants as histamine and alcohol. Such effects are not produced by the ordinary gastrojejunostomy but appear promptly when the bowel about the stoma is converted to a pedicle graft and the normal continuity of the tract is reestablished. Grafts from the colon or ileum are without such action while those taken from the duodenum are effective but considerably less so than jejunal implants. The presence of the factor responsible can be demonstrated in saline washings of isolated jejunal loops and accumulated evidence indicates that its effects are exerted by actual inhibition of acid secretion at least so far as the response to histamine is concerned, rather than by neutralization. Pedicle jejunal grafts were effective both in the prevention and in the cure of experimental ulcers produced in dogs by the prolonged administration of histamine phosphate. The effects of a pedicle jejunal graft are lost in the presence of a gastroenterostomy or pyloroplasty. The operation has been applied to patients with duodenal or marginal ulcer with excellent immediate clinical results in all and with gastric secretory changes in 2 of the 3 studied for a sufficient period after operation. If subsequent work confirms these findings, this may constitute a new approach to the surgical treatment of peptic ulcer.

**Effect of Gastric Surgery on Acidity**—In the course of a study of 1200 patients with peptic ulcer admitted to their wards in the past ten years, Heuer and Holman have assembled those patients who have been subjected to operation and who

have had careful preoperative and postoperative acidity determinations made. The purpose of the study has been (a) to determine the effect of gastroenterostomy and gastric resection on acid secretion, (b) to determine the acid secretion according to the magnitude of gastric resection, (c) to determine the results of operation in relation to the postoperative acid secretion and (d) to determine the results of operation regardless of the acid secretion. A study of the preoperative and postoperative acidities of 163 patients with peptic ulcer subjected to gastroenterostomy or gastric resection shows that postoperatively 61, or 37.4 per cent, have achlorhydria or low acidity while 102, or 62.6 per cent, have an adequate or high acidity. In the presence of these acidity findings 136, or 83.4 per cent of the patients have satisfactory clinical results. This lack of correlation between acidity and results leads the authors to doubt that a reduction in acid secretion is the sole factor in these two types of operation. Following gastroenterostomy there is no significant change in acid secretion, yet in this series of 75 patients 75 per cent have satisfactory results. It must be presumed that dilution and neutralization of acid rather than reduction in acid is the effective means of achieving these results, if acid is the important factor in the genesis of ulcer. Following gastric resection there is in general a reduction in acid secretion in proportion to the extent of the resection. But resection of any magnitude consistent with a reasonable mortality does not ensure achlorhydria. Moreover, when comparing the clinical results with the acidity a lack of correlation is again found for in minimal resection 90 per cent of the patients have satisfactory results while 25 per cent have a reduction in acid. It appears of doubtful value to pursue the idea of ensuring achlorhydria and therefore better results by larger and larger resections. The observations presented do not controvert the etiologic relationship between acid and ulcer.

**Thyrocardiac Disease**—Lahey and his associates feel that the advances in the surgical treatment of the thyrocardiac patient in the last twenty-five years have been gratifying. These advances fall into five periods. In the first period approximately twenty-five years ago, most cases with a diagnosis of thyroid disease and associated cardiac failure were rejected as hopelessly inoperable, because the mortality was almost prohibitive. The second period started a little over twenty years ago, when Hamilton described the diagnostic difficulties and surgical treatment of these patients and applied to them the term thyrocardiac. In this era it was demonstrated that these patients could endure subtotal thyroidectomy with a reasonable mortality and that subsequently an extraordinary degree of activity and cardiac capacity were restored and retained. The third period in which iodine was popularized by Plummer, was a most important one since it contributed materially to reduction of operative mortality. In the fourth period total ablation was advocated by Blumgart, Levine and Berlin. This method has been largely discarded. The fifth, and present, period is characterized by a much better understanding of what causes decompensation in a patient with hyperthyroidism, why the patient is so dramatically benefited by subtotal thyroidectomy and why the benefits of subtotal and total thyroidectomy in a patient with decompensation but without hyperthyroidism are so transitory. This period is characterized by an improved understanding of oxygen needs, preoperative preparation, anesthesia selection postoperative care and less importantly, vitamins. Under the term thyrocardiac the authors place only those patients whose heart complications are definitely attributable to an overactive thyroid. They hope for a sixth period in which earlier diagnosis and operation, and even prophylactic subtotal thyroidectomy for early toxic adenoma and early auricular fibrillation would give even better results.

**Thrombosis and Embolism**—Allen and his associates stress the high percentage of emboli that can be traced to the leg veins. These thromboses usually start in the veins of the calf muscles and propagate into the larger veins of the leg. The long straight femoral vein can harbor enough thrombus to occlude the pulmonary artery completely if it becomes free at one time. Actually, repeated minor infarcts, or at least sublethal emboli, may precede for several days and rarely for several weeks a fatal episode. Thyroid heparin lecithin Lim-

bar sympathetic block and dicumarol were variously employed. Homans suggested the feasibility of interrupting the deep veins of the leg to prevent pulmonary infarction. The authors ligated the femoral vein or veins in 202 cases. The indications are usually apparent. Pulmonary infarcts, tenderness over the leg veins, swelling of the leg, however slight, dilated superficial veins, discomfort in the calf muscles if the foot is passively dorsiflexed (Homans' sign), and slight elevation of temperature, pulse and respiration are all satisfactory guides. One usually has to make a decision on one or two of these criteria, although frequently all are present. Phlebograms are difficult to interpret and may be misleading. In a large majority of cases bilateral interruption should be undertaken. Unilateral interruption may be safely done in the younger age group. In patients beyond the age of 40 bilateral interruption at one sitting should be the rule. Mechanical removal of the thrombus from the vein by aspiration is a safe procedure. It certainly reduces the pain and swelling in the leg and hastens recovery. No deaths have occurred in a group of 202 patients as a result of femoral vein interruption. Sequelae are not severe and they are not disabling.

### Archives of Dermatology and Syphilology, Chicago 18 359-478 (Oct) 1943

- Mycosis Fungoides with Bullous Lesions. Report of Case Resistant to Roentgen and Arsenical Therapy. Effects of Empire Therapy, Partly Based on Laboratory Investigations. J. Girth and I. Wile—p. 359.  
Calamine and Neosalicylic 1942. H. Goodrum—p. 369.  
Treatment of Scabies in Wartime. M. Oppenheim and H. A. Smith—p. 370.  
Evaluation of Measures for Prevention of Ivy Dermatitis. J. B. Howell—p. 371.  
Chicken Embryo Antigen (Lysarum) Test for Lymphogranuloma Venereum. Clinical Investigation. L. B. Heisel and G. Strand III in collaboration with M. Krause, W. Hubler II, A. Cole Jr. and R. Cord—p. 379.  
Studies on Ointments. IV. Local Action of Salicylic Acid Plus Sulfur from Various Ointment Bases. E. A. Strakosch—p. 384.  
Id. V. Ointments Containing the ointment. E. A. Strakosch—p. 393.  
Vitiligo. S. Kothman, I. Rubin and Marietta Houston—p. 400.

### Archives of Pathology, Chicago 36 335-436 (Oct) 1943

- Hereditary Multiple Exostosis. H. L. Jaffe—p. 335.  
Granulomatous Prostatitis. Histologic Study of Group of Granulomatous Lesions Collected from Prostate Glands. F. H. Fanner and J. R. McDonald—p. 358.  
\*Changes in Thymus with Special Reference to Myasthenia Gravis. Observations in Series of Six Thousand Autopsies. I. Homburger—p. 371.  
Experimental Studies in Cardiovascular Pathology. IX. Reactions in Blood and Organs of Dogs on Intravenous Injection of Solution of Glycogen. W. C. Hueper—p. 381.  
Sudden Death of Young Athlete with Excessive Concentration of Epinephrine-like Substances in Heart Muscle. W. Raab—p. 388.  
Studies on Hemolytic Streptococci. VI. Comparison of Experimental Lesions by Toxins of Streptococcus of Scarlatina with Those in Fulminating Scarlatina. Alund I. Menden and Marie A. Andersen—p. 393.  
Alkaline Phosphatase Level in Urine in Relation to Renal Injury. C. Breedis, C. M. Flory and J. Furth—p. 402.  
\*Fulminating Meningococcal Infection (Waterhouse-Friderichsen Syndrome). P. A. Herbut and W. L. Manges—p. 413.

**Thymus and Myasthenia Gravis.**—Homburger reports that among 6,000 autopsies performed at the New Haven Hospital there were found 41 instances of tumor or of enlargement of the thymus. Twenty-seven of these were in children under 16 years of age. The remaining 14 include 3 cases of cancer, 3 of enlargement of the gland in thyrotoxicosis, 6 of enlargement of the gland encountered incidentally at necropsy and 2 of nonneoplastic thymic tumor coincident with myasthenia gravis. Epithelial metaplasia was a prominent feature and was accompanied by scarcity of the corpuscles of Hassall in the 2 thymic tumors associated with myasthenia gravis. This is in accordance with the conclusions of Bell, Lievre and Norris that thymic tumors in patients with myasthenia gravis are of a distinct type characterized by epithelial metaplasia, it is in contradiction to the more recent opinion of Obraditsch and Sloan, who stress the predominance of lymphoid tissue in thymic tumors of patients with myasthenia gravis.

**Sudden Death of Athlete.**—Raab reports necropsy findings in a young healthy athlete, aged 21, who died suddenly of a stroke. The pathologic change observed was an excessive concentration of epinephrine-like substances in

the heart muscle (the highest of all values observed in a series of 54 normal and pathologic human hearts). From the results of studies of the hearts of animals and man it is concluded that this excessive concentration of sympathomimetic amines was incompatible with survival and was the immediate cause of death. The author suggests that chemical examination of the heart muscle may prove to be of forensic usefulness in cases of unexplained sudden death, particularly in those of death occurring under emotional or physical strain.

**Fulminating Meningococcal Infection Waterhouse-Friderichsen Syndrome.**—Herbut and Manges review the history of the Waterhouse-Friderichsen syndrome and report 4 cases, bringing the total to 125. Because of the rapid onset and the high fever, often associated with leukocytosis and a fulminating course with fatal termination, the syndrome has long been regarded as an overwhelming septicemia. Although meningococci have been shown to be the causative agent in over 60 per cent, the authors believe that this figure is much too low. It is the consensus that adrenal apoplexy is responsible for the death of the patients. The authors, however, concur with Aegerter that there is no proof that death in the Waterhouse-Friderichsen syndrome is due to adrenal failure rather than to toxicity caused by invasion of the blood stream. In 3 of their cases there were bilateral and massive adrenal hemorrhages. In the fourth case only a single small circumscribed hemorrhage was found in the right adrenal gland, while both medullas showed areas of hypoplasia. Sections of skin in 3 cases showed respectively congestion of the dermal capillaries, congestion, hemorrhages and inflammation, and congestion, hemorrhages, inflammation and thrombosis. In 3 cases with predominantly septicemic symptoms there were found dissociation of the liver cords, cloudy swelling of liver cells, sinusoidal congestion, perisinusoidal edema and diffuse infiltration with polymorphonuclear leukocytes. Meningococci were isolated post mortem in pure culture from the spinal fluid and the cardiac blood in 1 case and ante mortem from the spinal fluid and the nasopharynx in 1 case. Postmortem blood cultures in the remaining 2 cases yielded respectively a member of the Friedlander group and *Staphylococcus aureus*. Sections of the skin in each of these and of the adrenal gland in the former disclosed within the capillaries gram negative, bean shaped diplococci morphologically similar to meningococci. It is probable therefore that most, if not all, of the cases of the Waterhouse-Friderichsen syndrome in which other organisms have been isolated were caused by meningococci.

### Bulletin New York Academy of Medicine, New York 19 599-676 (Sept) 1943

- Malaria and Its Influence on World Health. P. F. Russell—p. 599.  
Brucellosis. Diagnosis, Differential Diagnosis and Treatment. H. J. Harris—p. 631.

### 19 679-746 (Oct) 1943

- Management of Rheumatic Fever. O. C. McEwen—p. 679.  
Treatment of Rheumatoid Arthritis Including Gold Salts Therapy. E. F. Hartung—p. 693.  
Cardiovascular Problems in War. Hypertension and Navy. A. M. Master—p. 704.  
Russian Psychiatry—Its Historical and Ideological Background. G. Zilboorg—p. 713.  
Limitations of Psychoanalytic Treatment. H. Nunberg—p. 729.

### Cancer Research, Baltimore 3 649-728 (Oct) 1943

- Observations on Chemically Induced Chicken Tumor Containing an Antigen Related to That of Leukosis Sarcoma Agent. R. G. Gottschalk—p. 649.  
Quantitative Evaluation of Experimental Skin Carcinogenesis by Methylcholanthrene. Factors of Dosage, Time Spacing of Applications and Multiplicity of Carcinogenic Response. W. Cramer and R. E. Stowell—p. 668.  
Experimental Brain Tumors. III. Tumors Produced with Dibenzanthracene. Hildegard Arnold and H. M. Zimmerman—p. 682.  
Metabolism of 1,2-Benzanthracene in Mice and Rats. I. Berenblum and R. Schoental—p. 686.  
Absorption Spectrums of 1,2-Benzanthracene and of Some Methoxy Derivatives. E. R. Holiday—p. 689.  
Spontaneous Primary Hepatomas in Mice of Strain C57H. II. Influence of Breeding on Their Incidence. E. L. Burns and J. R. Schenken—p. 691.  
Tumor Inhibitor Studies. II. Effect of Plant Hormones on Tumor Growth. B. E. Klue and H. P. Rusch—p. 702.



## Endocrinology, Springfield, Ill

33 189-269 (Oct.) 1943

- Factors Affecting Colorimetric Urinary 17 Ketosteroid Determinations  
Ira T. Nathanson and Hildegard Wilson—p. 189
- Inactivation of Estrone and Diethylstilbestrol by Micro-Organisms.  
B. Zondek and F. Sulman—p. 204
- Intrasplenic Injection of Estrogens and Their Esters A. Segaloff  
—p. 209
- Constancy of Androgen Concentration in Urine F. Hollander, B. Kriss  
E. Klempner and R. T. Frank—p. 217
- Study of Interrelationship of Pancreatic Diabetes with Endocrine Glands  
in Toad Christiane Dosse—p. 224
- Study of Colorimetric Assay of Urinary 17 Ketosteroids W. W.  
Engstrom and H. L. Mason—p. 229
- Inhibiting Effect of Adrenocorticotrophic Hormone on Growth of Male  
Rats H. M. Evans, Miriam E. Simpson and C. H. Li—p. 237
- Studies on Maintenance of Pregnancy in White Rat F. N. Zeiner  
—p. 239
- Relation of Certain Endocrine Glands to Body Weight in Growing and  
Mature New Zealand White Rabbits H. H. Kibler, A. J. Bergman  
and C. W. Turner—p. 250

## Illinois Medical Journal, Chicago

84 229-288 (Oct.) 1943

- Evaluation of Pateol with Heart Disease as Surgical Risk L. E.  
Hines—p. 246
- Exposure of Retroduodenal Portion of Common Duct R. B. Bettman  
and H. O. Laufman—p. 250
- Importance to Adolescent Girl of Gynecologic Examination E. Allen  
—p. 251
- Psychiatric Problems in Adolescence D. Slight—p. 255
- Program of Medical and Hospital Care for Wives and Families of  
Enlisted Men F. L. Adair—p. 259
- Gold Therapy of Arthritis E. F. Traut and E. M. Barton—p. 263
- Importance of Proper Operative Incisions A. B. Owen—p. 264
- Convulsive Shock Therapy V. L. Evans—p. 267
- Factors Influencing Duration of Acute Tonsillitis M. Tamari and  
A. M. Berman—p. 269

## Journal of Clin. Endocrinology, Springfield, Ill.

3 483-528 (Sept.) 1943

- Biometric Study of Total Neutral 17 Ketosteroid Excretion in Normal  
Adult Male H. Wooster—p. 483
- Absorption Rate of Desoxycorticosterone Acetate Pellets E. P.  
McCullagh, Lena A. Lewis and F. L. Shively Jr—p. 493
- Addison's Disease Associated with Pubic and Axillary Alopecia and  
Normal Menses E. J. Kepler, G. A. Peters and H. L. Mason  
—p. 497
- \*Pregnancy Complicating Diabetes Report of Clinical Results  
Priscilla White and Hazel Hunt—p. 500
- Estrone Sulfate Clinical Study P. H. Fried and Q. Hair—p. 512
- Present Status of Gonadotropic Therapy in Gynecologic Practice. M. E.  
Davis and A. A. Hellbaum—p. 517

**Pregnancy Complicating Diabetes**—According to White and Hunt, pregnancy in diabetic women is often characterized by fetal wastage. The percentage of viable infants from diabetic mothers is still about the same as it was before the introduction of insulin. The authors made assays for chorionic gonadotropin and pregnandiol after the twenty-fourth week of pregnancy in 125 consecutive cases. Forty-one showed normal hormone excretion levels and 77 abnormal levels. In 27 of the latter replacement therapy was not employed. Of the 41 women classified as normal, none delivered prematurely, 2 per cent developed toxemia and 95 per cent of the fetuses survived. The 27 classified as abnormal and untreated developed toxemia in 52 per cent, premature delivery in 40 per cent and 60 per cent of the fetuses survived. Substitutional therapy was administered to 50 women with abnormal hormone excretion and 7 others classified as having had abnormal pregnancies because of past history or clinical signs. Toxemia appeared to be modified in this series. Premature delivery occurred in 25 per cent, and fetal survival was 92 per cent. The management of the pregnant diabetic woman at the authors' clinic includes endocrine therapy if indicated, adequate control of carbohydrate metabolism and premature delivery. Fetal wastage in diabetic mothers seems to be related to an imbalance of chorionic gonadotropin and pregnandiol in pregnancy. Correction of the imbalance in this series appeared to be followed by fetal survival approaching that of the group classified as normal on the basis of hormone assays and also approaching the fetal survival of non-diabetic pregnancies.

## Journal of Experimental Medicine, New York

78 225-326 (Oct.) 1943

- Disappearance of Phosphatase from Hydronephrotic Kidney H. A.  
Wilmer—p. 225
- Stability of Variola Virus Propagated in Embryonated Eggs J. B.  
Nelson—p. 231
- \*Laboratory Transmission of St. Louis Encephalitis Virus by Three  
Genera of Mosquitoes W. McD. Hammon and W. C. Reeves—  
p. 241
- Oxidation of p-Aminobenzoic Acid and Anthranilic Acid by Specifically  
Adapted Enzymes of Soil Bacillus G. S. Mirick—p. 255
- Susceptibility of *Cebus Capucina* (South American Ringtail Monkey)  
and *Cercopithecus Cephus* (African Mustache Monkey) to Polio-  
myelitis Virus J. L. Melnick and J. R. Paul—p. 273
- Effects of Roentgen Rays on Cell Virus Associations Findings with  
Virus Induced Rabbit Papillomas and Fibromas W. F. Friedewald  
and R. S. Anderson—p. 285
- Studies on Herpetic Infection in Mice G. P. Berry and H. B. Slavin  
—p. 305

**Laboratory Transmission of St. Louis Encephalitis Virus by Mosquitoes**—In previous communications Hammon and Reeves outlined the epidemiologic evidence pointing to mosquito transmission of St. Louis encephalitis virus. They now report mosquito transmission experiments which were performed in field laboratories in the lower Rio Grande Valley, Texas, and in the Yakima Valley, Washington. The St. Louis virus has been successfully transmitted in the laboratory by the following nine species of mosquitoes from three genera: *Culex tarsalis*, *Culex pipiens*, *Culex coronator*, *Aedes lateralis*, *Aedes taeniorhynchus*, *Aedes vexans*, *Aedes nigromaculis*, *Theobaldia incidens* and *Theobaldia mornata*. In experiments with *Culex tarsalis*, infection occurred from feeding on chickens and ducks which had been previously inoculated by the subcutaneous route. After an incubation period these mosquitoes infected other chickens and virus was in turn demonstrated in the blood of these. This is interpreted as proof that fowl may serve as reservoirs of virus in nature. Since mosquitoes have been repeatedly found naturally infected with St. Louis virus and epidemiologic evidence supports their incrimination, their role as vectors is now established.

## Journal of Urology, Baltimore

50 265-388 (Sept.) 1943 Partial Index

- Wilms's Tumor With Report of 8 Year Cure N. F. Ockerblad and  
H. E. Carlson—p. 265
- Reimplantation of Renal Pelvis S. F. Wilhelm—p. 274
- Reproduction of Renal Overdistention Pain. Its Clinical Diagnostic  
Value C. A. Wattenberg and D. K. Rose—p. 280
- Estimation of Renal Function Based on Specific Gravity Changes Follow-  
ing Intravenous Urography G. O. Baumrucker—p. 290
- Experiences with Ureteral Calculi H. S. Browne—p. 301
- Fracture of Pelvis with Perforation of Urinary Bladder A. E. Guerra  
—p. 307
- \*Response of Bladder Tumors to External Radiation C. C. Herger and  
H. R. Sauer—p. 310
- Gynecologic and Urologic Management of Cystocele S. B. Potter and  
H. T. Low—p. 322
- Hypospadias H. L. Wehrlein—p. 330
- Carcinoma of Prostate O. J. Wilhelm—p. 341
- Operative Management of Hypertrophy of Prostate with Complicating  
Coronary Heart Disease D. Antonio Jr—p. 344
- Downward Suction Drainage After Prostatectomy F. C. Hendrickson  
and H. K. Guth—p. 355
- Genitourinary Tuberculosis in Army General Hospital R. L. Smith and  
J. F. Harold—p. 361
- Urologic Factors Influencing Hypertension B. A. Hayes and J. D.  
Ashley—p. 366
- Premature Ejaculation Review of 1130 Cases B. Schapiro—p. 374
- Carcinoma of Urethra in Female with Special Reference to Importance  
of Histologic Examination in Differential Diagnosis H. W. E.  
Walther—p. 380

**Response of Bladder Tumors to External Radiation**—Herger and Sauer report results in 160 patients with carcinoma of the bladder treated by external radiation. Twenty-five of these patients had papillary carcinoma, 91 had papillary infiltrating carcinoma and the remaining 44 had solid infiltrating carcinoma. If 200 kilovolts radiation was given, two three and four fields were treated with a daily increment varying from 100 to 400 roentgens. If supervoltage radiation was employed, radiation was given through three or four ports with a daily increment of from 100 to 300 roentgens. Satisfactory results were obtained in more than 50 per cent of the patients with papillary and papillary infiltrating carcinomas. In 13 of these the tumor disappeared entirely after external irradiation.

alone. In 44 definite regression in size and number of the tumor growth was obtained, rendering the tumor suitable for subsequent transurethral treatment. In 24 patients regression was only temporary. No response from external radiation was obtained in 35 patients with papillary carcinoma. Only 1 of the 44 patients with solid infiltrating cancer responded favorably, in the remaining 43 the response to irradiation was unsatisfactory. These tumors are radioresistant and are better treated with interstitial radiation or surgical procedures.

## Ohio State Medical Journal, Columbus

39 889-984 (Oct) 1943

- Acquired Sensitivity to Injectable Liver Extracts R T Warburton—p 905  
Epileptoid and Shock Phases of the Syncope Syndrome and Possible Role of Acetylcholine in Their Genesis R D Barnard—p 907  
Psychologic Factors in Bilateral Prefrontal Lobotomy G W Hasker—p 913  
Ligation of Inferior Vena Cava Case Report L N Atlas—p 917  
Two Cases of Brenner Tumor One of Unusual Size P J Reel and P C Foster—p 919  
Congenital Retroversion of Uterus Misnomer J L Bubis—p 922  
\*Intravaginal Sulfanilamide Insufflation in Treatment of Trichomonas Vaginalis Vaginitis R K Finley and J M Shaffer—p 924  
Management of Pregnancy and Labor Complicated by Extensive Bronchiectasis Z J R Hollenbeck—p 926  
Preventive Approach to Defective Hearing E E Kleinschmidt—p 929  
Chronic Pyelonephritis with Hypertension and Vascular Disease of Abdominal Tract—V D Hauenstein and Pearl M Zeek—p 932

**Intravaginal Sulfanilamide Insufflation in Trichomonas Vaginalis Vaginitis**—Finley and Shaffer employed intravaginal insufflation of sulfanilamide powder in the treatment of 31 patients with Trichomonas vaginalis vaginitis. Following one insufflation of 3 Gm of powder, all symptoms subsided within a matter of hours. The powder appears to act specifically against both the flagellates and other bacterial invaders commonly found in conjunction with them.

## Psychosomatic Medicine, Baltimore

5 323-404 (Oct) 1943

- The Unfit How to Exclude Them L G Rowntree—p 324  
Multiple Choice Test for Screening Purposes (for Use with Rorschach Cards or Slides) M R Harrower Erickson—p 331  
The Unfit How to Use Them H W Brosin—p 342  
Sociopsychiatric Investigation of Schizophrenia Occurring in Armed Forces W Malamud and Irene Malamud—p 364  
On So-Called War Neuroses K Goldstein—p 376

## Virginia Medical Monthly, Richmond

70 485-542 (Oct) 1943

- Treatment of Pneumonia and Its Complications J H Smith—p 488  
\*Meningococcal Meningitis Clinical Evaluation of 27 Cases Observed at Riverside Hospital Newport News, Va, from Nov 1, 1942 to May 3, 1943 E B Newborne, I S Tolpin and G Hirschberg—p 492  
Recent Advances in Intracapsular Cataract Surgery E G Gill and J H Gressette—p 501  
Meningococcal Meningitis Treated with Sulfadiazine J S Weitzel—p 505  
Robert Honyman Doctor of Physic M H Harris—p 507  
Cerebral and Basal Ganglia Degeneration Due to Anoxia Secondary to Anesthesia Case Report W D Suggs—p 513

**Meningococcal Meningitis**—Newborne and his associates report 27 cases of epidemic meningitis treated at the Riverside Hospital of Newport News, Va, during a six month period. During increased prevalence of epidemic meningitis spinal puncture should become a routine measure. In all questionable cases repeated punctures should be done at twenty-four hour intervals. It is essential to watch for atypical cases, such as the severe septicemic form. Absence of signs of meningeal irritation does not exclude meningitis. The authors cite 3 cases in which stiff neck and Kernig's sign were absent. Three cases are reported because of the rapidity of onset, there was little or no prodromal period. In 1 case a meningococcal pneumonia developed, which did not respond to treatment. Age plays a decisive part in prognosis, in children and young persons it is favorable. The average case of epidemic meningitis will respond to adequate sulfadiazine therapy in from twenty-four to forty-eight hours. Treatment should be aimed at the early procurement of a high sulfadiazine blood level by a high initial dose followed by an adequate maintenance dose. Kidney complications due to sulfadiazine toxicity can be averted or mitigated by (a) alkalization and forcing fluids, (b) daily urine analysis and charting of intake and output and (c) discontinuance of sulfadiazine when signs of renal lesions develop.

## Western J Surg, Obst & Gynecology, Portland, Ore

51 389-418 (Oct) 1943

- Subcutaneous Symplysiotomy in Incomplete and Complete Deflexion of Head—p 389  
Pyelonephritis G Prewitt—p 393  
Ergonovine by Vein During Second Stage Observations in Private Practice G McConnell and G C Schaffner—p 403  
Practical Aspects of Endocrine Therapy S C Freed—p 407  
Premarital Examination Nadina Davinoky—p 412

## Medical Annals of District of Columbia, Washington

12 327-372 (Sept) 1943

- Presidential Address Present Needs and Future Requirements J E Paulin—p 327  
Surgical Treatment of Thrombosis of Peripheral Veins J R Vial and H H Hussey—p 333  
Dementia Praecox Complexes J R Ernst—p 343  
Peritoneoscopy L Gerber—p 315

## Medicine, Baltimore

22 205-286 (Sept) 1943

- Physiologic Effects of Carbon Dioxide on Activity of Central Nervous System in Man with Special Reference to Problem of High Altitude Flying Review Mary A B Brazier—p 205  
Tonus and Vasoconstrictor Mechanism Clinical Physiology of Major Mode of Death Y Henderson—p 223  
Serum Sickness and Allergic Reactions from Certain Drugs, Particularly Sulfonamides W F Longcope—p 251

## Military Surgeon, Washington, D C

93 339-388 (Oct) 1943

- Medical Department of U S Navy in Philippines C B Camerer—p 339  
What Hitler Means in 'Mein Kampf' or What American Soldier Should Know About Hitler's Book 'Mein Kampf' in Case He Reads It H M Moore—p 352  
Primary Atypical Pneumonia (Virus Pneumonia) I D Sittenfeld—p 360  
Pneumonia Survey of 106 Cases—p 364  
Technic for Apicectomy with Immediate Root Filling S S Shapiro and L B Minter—p 368  
Adaptor for Fluoroscopic Depth Localization L Macta—p 372  
Gas Mask Spectacle Pliers K D MacMillan—p 375

## New England Journal of Medicine, Boston

229 533-570 (Sept 30) 1943

- Modern Pharmacy and the Medical Profession H C Newton—p 533  
Study on Effectiveness of Dietary Consultation H T Kelly and Myrtle Sheppard—p 536  
Potassium Sulfocyanate Therapy in Essential Hypertension Ethel Fanson Deia Kinsey and R S Palmer—p 540  
Physiology H E Hoff—p 543

229 571-604 (Oct 7) 1943

- Work of Massachusetts Boards of Registration in Medicine and Nursing H Q Gallup—p 571  
Carcinoma of Larynx L A Schall—p 574  
Erythroblastosis Fetalis Report of Case G J Newerla—p 576  
Histamine by Mouth in Treatment of Vasomotor Rhinitis J C Gant, R J Savignac and A Hochwald—p 579  
Diagnosis of Gout W Bauer—p 583

## New Orleans Medical and Surgical Journal

96 129-176 (Oct) 1943

- Lesions of Stomach I J Hodges—p 129  
Infantile Paralysis Its Description and Treatment Elizabeth Kenny—p 134  
\*Chronicity of Leprosy G H Faget—p 138  
American Contributions to Neurosurgery C Wilson—p 140  
Undulant Fever Its Epidemiology and Diagnosis P K Thomas—p 147

**Chronicity of Leprosy**—Faget found among 380 inmates at the National Leprosarium in Carville, La., 5 with the neural type of leprosy who have had the disease for 53, 51, 48, 46 and 41 years respectively. Eighteen others, 14 with neural and 4 with mixed leprosy, have survived 30 to 40 years of leprosy, and 32 (19 neural and 13 mixed cases) have suffered from leprosy for 20 to 30 years. Thus a total of 55 patients, over 14 per cent of the entire population of the National Leprosarium, show a chronicity of leprosy of over 20 years' duration. This chronicity is found chiefly in the neural type, for, although neural leprosy exists in less than 30 per cent of the total number of patients at the Carville leprosarium, 38 of the 55 patients (nearly 70 per cent) who had survived leprosy for more than 20 years had the neural type.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Surgery, Bristol

31 1-100 (July) 1943

- Role of Bile in Duodenal Regurgitation L R Braithwaite—p 3  
 \*Role of Chemotherapy in Treatment of Hematogenous Osteomyelitis K C McKeown—p 13  
 Intussusception of Appendix. K. Fraser—p 23  
 Calculi Impacted in Lower Fourth of Ureter. Their Removal by Ureteral Corkscrew J C Ainsworth Davis—p 34  
 History of Blood Transfusion 1628-1914 C Keynes—p 38  
 \*Abdominal Injuries Due to Under Water Explosion G R Cameron R H D Short and C P G Wakeley—p 51  
 \*Clinical Study of Injuries of Abdomen Due to Under Water Explosion W G Gill and C P Hay—p 67

## Chemotherapy in Hematogenous Osteomyelitis—

According to McKeown chemotherapy may limit the extent of surgical intervention in acute osteomyelitis. He treated 26 cases with sulfathiazole in combination with various types of surgical intervention. In group 1 sulfathiazole was given in doses of 1 Gm to 20 pounds (9 kg) of body weight daily. Administration was begun at the onset of the disease and continued for eight days. A repeat course of similar dosage and duration was given after an interval of three weeks. The surgical treatment in these cases consisted in making multiple drill holes in the metaphysis. Operation was carried out between the second and the sixth day of the disease, and the closed plaster technic was adopted. Patients in group 2 were given sulfathiazole in adequate doses. In the first case in this group no operation in the acute stage of the disease was carried out, while in the other cases only the periosteum was incised. In group 3 sulfathiazole was given in two courses as in the first group but the operative treatment consisted in incision of the periosteum and extensive bone guttering. Group 4 consisted of cases in which bone drilling was carried out but sulfathiazole was either given in small doses or its administration was not started until a considerable time after the onset of the disease. The administration of sulfathiazole in the early stages of acute osteomyelitis, when combined with bone drilling appears to confine the destructive bone changes to a relatively small area and to minimize their severity. The duration of the disease also is remarkably short. When sulfathiazole is given at a late stage in the disease or in small doses, as in group 4, the favorable features observed in group 1 are no longer attained, though the surgical intervention was identical. Early administration of adequate doses of sulfathiazole is not in itself sufficient to limit the severity of bone infection unless combined with surgical intervention. Simple incision of the periosteum does not provide sufficient drainage, while the procedure of bone guttering appears to be unnecessarily extensive and even harmful.

## Abdominal Injuries Due to Under-Water Explosion.—

Cameron and his associates report 20 cases in which operation was done for abdominal injuries due to under-water explosions from depth charges, mines, bombs and torpedoes. There were ten deaths, or a mortality of 50 per cent. The commonest lesions were retroperitoneal and subserous hemorrhages, which occurred in all cases. Perforations of the cecum were present in 9 cases and of the ileum in 7 cases, while multiple perforations were present in 4 cases. Late perforations occurred in 2, the cause being probably hemorrhages initiated by the primary injury. These local hemorrhages in the wall of the bowel gradually became infected and ruptured into the peritoneal cavity. The intestinal lesions varied from intramural hemorrhages to laceration of the intestinal wall. The large intestine suffered more than the stomach or small bowel (14 cases out of the total of 20) because the effects of blast are always more severe on air filled cavities and because the large intestine is not as muscular as the stomach or the small bowel. In 80 cases in which recovery occurred from the immersion blast without operation the commonest symptom was abdominal pain which persisted for from three days to three months. Melena was present in 82 per cent of these and in some it persisted for four months. In 20 per cent there was a history of hemoptysis, and in 14 per cent hematemesis was reported. There was no history of external injury. Of 32 cases in which

sigmoidoscopy was performed only 2 presented definite abnormality, and in these cases small scattered petechial hemorrhages could be seen high up on the rectal wall and in the lower sigmoid. Examination a month later revealed a normal mucous membrane. Patients who recover from immersion blast rarely suffer from permanent effects. The authors also report experimental studies on 16 goats.

## Abdominal Injuries Due to Under-Water Explosion—

Gill and Hay report clinical observations on 16 patients following injury to the abdomen by under-water explosion. These men had been in the vicinity of exploding depth charges, and 3 were involved by the explosion of a destroyer's magazine. There were no direct gunshot wounds of the abdomen. The clinical picture varied considerably, from those who climbed aboard the hospital ship unassisted and complained only of abdominal pain associated with tenderness and rigidity of the abdominal wall, to those who were profoundly shocked and obviously suffering from a severe intra-abdominal catastrophe. The presenting symptoms always was abdominal pain, varying from a dull ache to a pain of agonizing character, and this was associated with a corresponding variation in the physical signs. Six patients were operated on. Of these 2 recovered, 1 having had two ileac perforations sutured and the other a diffuse peritonitis without discernible perforation and a postoperative pelvic abscess which developed later. Four died, 3 having sustained perforations of one or more hollow viscera, and 1 with subserous ecchymoses of the mesentery and small intestine and a severe lung injury. It is almost impossible to say during the first few hours after the injury which patients will require surgical treatment. After the preliminary treatment for shock and response to this treatment the presence of severe unremitting and more especially increasing abdominal pain, with tenderness and rigidity of the lower abdomen, particularly in the presence of melena, bowel actions and difficulty in micturition, are indications for laparotomy. A midline abdominal incision is recommended.

## Journal of Endocrinology, London

3 235-322 (Aug) 1943

- Effects of Estrone on Ovary of Mouse W S Bullough—p 235  
 Studies on Parathyroid of Mouse I Cytology of Normal Gland in Relation to Its Secretory Activity C L Foster—p 244  
 Comparative Action of Stilbestrol and Estrone on Body Growth and on Weight and Gonadotropin Content of Hypophysis F E Emery—p 254  
 Reaction of Uterine Epithelium of Rat to Estrogenic Stimulation E S Horning—p 260  
 Induction of Superovulation and Superfecundation in Ralbits A S Parkes—p 268  
 Cyclical Changes in Skin of Mouse During Estrous Cycle Helena F Bullough—p 280  
 Rate of Absorption of Esters of Estrone and Estradiol as Determined by Feather Tests A S Parkes—p 288  
 Role of Adrenal Cortex and Anterior Pituitary Gland in Induced Secondary Shock Symptoms M Reiss L D MacLeod and Y M Lolla—p 292  
 Effect of Various Hormones on Chemical and Physical Properties of Bone G H Bell and D P Cuthbertson—p 302  
 Production of Ovulation in Hypophysectomized Rats I W Rowlands and P C Williams—p 310  
 Urinary Excretion of Estrogens Following Injection of Proestrogens in Guinea Pig C W Emmens—p 316

## Journal of Royal Naval Medical Service, London

29 153-224 (July) 1943

- \*Postarsenical Jaundice and Dermatitis Survey of Records from St Thomas's Hospital 1929-1941 T Anwyl Davies—p 153  
 Arsenoxide (Napharsen) versus Neocarphenamine S F Dudley—p 170  
 Investigation into Incidence of Trachoma in Maltese Islands Its Early Diagnosis and Mode of Spread with Special Application to the Armed Forces D P Gurd—p 171  
 Painful Feet R M Latta—p 182  
 Sciatic Pain H I Hoffman—p 184  
 Lookout Problem in Submarines Defective Night Vision A F M Barron—p 189  
 Serologic Tests for Syphilis in Personnel of Large Ships Under War Conditions R I Crick—p 196  
 \*Typhoid Infection in the Inoculated W I D Scott—p 198

Postarsenical Jaundice and Dermatitis—Anwyl-Davies shows that to become spirocheticidal the neocarphenamines must be oxidized in the body. They contain from 18 to 21 per cent of arsenic. On exposure to air and to heat they undergo a change and then are rendered highly toxic. The solutions

must be fresh and cold and must be injected immediately after preparation. Arsenoxide (mapharsen) is believed to be the active spirocheticidal principle and so does not require converting in the body to become spirocheticidal. It is believed to be the first product of the breakdown of arsenphenamine in the tissues and invariably contains 29.01 per cent of arsenic. When stored dry and under cool conditions it is stable, but when exposed to air and moisture it is gradually oxidized to less toxic pentavalent compounds and so, in direct contrast to solutions of neoarsphenamine, does not become more toxic either in the body or while standing in solution. Of 1,946 patients treated with neoarsphenamine, 574 developed jaundice and 134 dermatitis, total, 35.65 per cent. Of 1,147 patients treated with mapharsen, 146 developed jaundice and 14 dermatitis, total, 13.95 per cent. Mapharsen gave the lowest percentage of intolerance (13.95 per cent) and the shortest average illness of 18.7 days per attack of jaundice compared with the other arsenicals, and its substitution for the neoarsphenamines has considerably reduced the mortality rate. One death occurred for 20,467 injections of mapharsen against one death for 5,660 injections of neoarsphenamine. Some patients that have had jaundice following the neoarsphenamines subsequently tolerated mapharsen. Mapharsen, while being a more efficient remedy, appears to be less toxic than the neoarsphenamines. Age and seasonal factors in the causation of jaundice and dermatitis appear to be negligible.

**Typhoid Infection in the Inoculated**—Scott reports an epidemic of typhoid which had occurred among a group of inoculated naval ratings in a country where the infection is endemic. A higher percentage of contacts acquired the disease than might be expected among the inoculated. A concurrent epidemic of dengue made diagnosis difficult, particularly in the early stages, and failure to culture the organism, except in 1 case, enhanced the importance of the combination of clinical and serologic features. The course of the disease was atypical in many cases. There was no mortality, and toxic features predominated over those of virulence. The total number of inoculations was more important in determining the course of the disease than the recency of inoculation. Interesting clinical features included a high incidence of myocarditis and two virtually apyrexial patients, one diabetic. Typhoid H agglutinins in a titer of 1:125 or above were of some value in diagnosis. A completely negative result was not significant. There was a rise in the average titer of typhoid and paratyphoid H agglutinins in inoculated ratings who had recently suffered from a nonspecific febrile illness. Typhoid O agglutinins in a titer of 1:50 or less were present only in cases of clinical typhoid. Vi agglutinins were less valuable in the positive diagnosis of typhoid than O agglutinins. Their presence usually indicated an *Eberthella typhosa* infection, and they were found to persist up to at least six weeks after subsidence of the main symptoms. A positive Vi reaction was not proved to indicate the presence of living typhoid bacilli in the body, and extensive application of the test failed to detect a healthy carrier among those giving a positive result. Recent inoculation failed to produce agglutinins to *Salmonella paratyphi B* in a majority of cases.

#### Revista de la Asoc. Med. Argentina, Buenos Aires 57 343-412 (June 30) 1943 Partial Index

\*Tracheobronchial Lesions in Primary Tuberculosis I. Saye, A. Bence, A. Bolini, C. Emhami, D. Fernandez Luna and J. C. Dighiero—p. 343  
Amebic Hepatitis and Rheumatic Pericarditis. M. del Sol—p. 355

**Tracheobronchial Lesions in Primary Tuberculosis**—Saye and his associates report 10 cases of primary tuberculous infection observed in children and adults in which bronchoscopic examination revealed bronchial or tracheobronchial lesions of different nature such as congestive and hemorrhagic areas, ulcers, submucous infiltration, and ulcerating and non-ulcerating granulomas. In all cases but one the tracheobronchial lesions were diffuse and extensive. There was a definite correlation between these lesions and the radiologic signs of atelectasis. The tracheobronchial lesions not only are responsible for

immediate complications but may lead, if neglected, to cicatricial processes and residual bronchiectasis. In 3 cases treated with gold salts a considerable reduction or complete disappearance of the bronchial lesions was obtained in four to five months with consequent patency of the bronchial tracts. The authors advise bronchoscopic examination in every case of primary infection.

#### Revista Chilena de Pediatría, Santiago 14 391-468 (June) 1943 Partial Index

Treatment of Angiomas by X Rays A. Rabausen and J. Abud O—p. 391

\*Meningococcic Infection of Joints H. W. Jaeger—p. 414

**Meningococcic Infection of Joints**—According to Jaeger the meningococcic arthritis is an early feature of the hematogenous invasion. Thirty-seven (37.0 per cent) cases of meningococcic arthritis were encountered among 1,000 cases of meningococcic infection. The wrists and the knees were the joints most frequently involved. In about 60 per cent of the cases more than one joint was affected. The meningococcic infection of the joints is not limited to the articular surfaces but involves also the surrounding structures. Two cases of meningococcic purulent bursitis and tenosynovitis were casually found at necropsy and they are the first cases reported in the literature. The incidence is evenly distributed between the two sexes and among all age groups. The treatment failed to modify the clinical course of the arthritis. High doses of sulfapyridine and sulfadiazine had no influence on the joint infection even when it cured the meningococcemia and the associated meningitis.

#### Revista Clínica Española, Madrid 8 219-298 (Feb. 28) 1943 Partial Index

\*New Method for the Experimental Production of Thiamine Deficiency J. A. De Loureiro and I. Rodrigues—p. 235  
Clinical Importance of the Uniform Activity of Digitalis Drugs T. A. Redonnet—p. 248

**Experimental Production of Thiamine Deficiency**—Based on William's sulfite cleavage of thiamine, Loureiro and Rodrigues developed a practical and simple way of obtaining thiamine deficient diets. By treatment with sulfur dioxide, thiamine was entirely destroyed in the diet and the sulfur gas was easily disposed of. The basic diet used contained casein, flour, bakers' yeast, salts and cod liver oil. If both casein and yeast were treated by sulfur dioxide, the diet, administered to rats, caused an acute deficiency with death in three weeks. If only the yeast was sulfur treated the deficiency was subacute with severe symptoms of polyneuritis and death in five to six weeks. When thiamine was added to these diets the rats grew normally, showing that, with the exception of thiamine, all water soluble vitamins were unaffected by sulfur dioxide treatment.

#### Revista de la Facultad de Medicina, Bogota 11 567-630 (April) 1943 Partial Index

\*Concentrated Convalescent Serum in the Treatment of Exanthematic Typhus, Mumps, Measles and Chickenpox A. Macchiavillo—p. 567

**Concentrated Convalescent Serum in the Treatment of Typhus, Mumps, Measles and Chickenpox**—A simple method is described for the concentration of convalescent blood serum. The procedure consists of drying the serum in a cellophane bag in a vacuum followed by filtration. This concentrated serum was shown to offer some protection against exanthematic typhus. In a group of 50 persons who were susceptible typhus contacts only 2 acquired the disease. Thirty-four persons exposed to mumps were treated with the concentrated convalescent serum and none of them developed the disease. In a control group of 90 persons not treated 40 per cent developed mumps. When the serum was administered to 8 children with the disease, immediate regression of all local and general symptoms occurred. In measles the serum gave definite protection to exposed children and when administered early in the disease the so-called modified or attenuated form developed. Similar results were observed in a few cases of chickenpox. In all instances the dose given was 2 cc. for infants up to 1 year of age and 0.5 cc. more for each additional year.

**Archiv fur Kinderheilkunde, Stuttgart**

125 65-112 (Feb 27) 1942 Partial Index

- \*Treatment of Epidemic Meningitis Without Meningococcus Serum  
Ilse Bauer—p 65  
Experiences with a Diagnostic Tuberculin Plaster E Heinz—p 71  
Syphilis Connatalis Case. W Abegg—p 88

**Treatment of Epidemic Meningitis Without Meningococcus Serum.**—Bauer reports observations on 68 infants and children with epidemic meningitis, who were treated during the years between 1936 and 1940. Meningococcus serum was given to none of these children because its use had been discontinued for lack of efficacy. The children were treated with blood transfusion, with sulfapyridine or with a combination of these two. The combined treatment reduced the mortality rate to 3.2 per cent. When blood transfusion and sulfapyridine were given at once without waiting for the bacteriologic confirmation of the diagnosis the results were even better. The combination treatment reduced the duration of the disease as well as the action of the bacterial toxins and of the inflammatory manifestations. The author regards the combined treatment with blood transfusion and sulfapyridine as the method of choice in epidemic meningitis.

**Deutsche medizinische Wochenschrift, Leipzig**

68 393 416 (April 17) 1942 Partial Index

- \*Sulfonamide Therapy in Otogenous and Rhinogenous Meningitis. W Tonndorff—p 393  
Prophylactic External Cephalic Version in Pelvic Presentation. W Reifferscheid and W Vent—p 396  
Storage and Warming Up of Boiled Foods with Regard to Preservation of Vitamins C. Dienst—p 400  
Early Diagnosis of Cardiac Lesions. H C Landen—p 403  
Differential Diagnosis of Tumor Like Sclerosis K. Zech—p 405  
Pathologic Changes in Course of Time H Hamperl—p 407

**Sulfonamide Therapy in Otogenous and Rhinogenous Meningitis.**—Tonndorff treated 21 patients with otogenous and 3 patients with rhinogenous meningitis by excision of the primary focus, by lumbar puncture and by intraspinal, intramuscular and oral administration of p-amino benzene sulfonacetamide (albacid). The minimum dose given was 17 Gm. within eleven days to a boy 8 years of age, while the maximum dose given was 148 Gm. within forty days to a man aged 41. Eight of the 24 patients died and 16 recovered. Three out of seven patients who were unconscious on admission recovered. Recovery occurred in 2 cases in which a cerebral abscess developed. Eleven patients with acute suppurative middle ear and 3 patients with chronic suppurative of the middle ear and labyrinthitis recovered. Recovery in all cases was slow and in some instances was interrupted by a relapse. Equally good results were obtained by Unterberger, who reports 25 recoveries out of 39 cases of otogenous meningitis.

68 441-472 (May 1) 1942 Partial Index

- \*Cachectic Edema in Diffused Glomerulonephritis. W Nonnenbruch—p 442  
Causes of Hypertension in Essential Hypertension A. Ruhl—p 445  
Psychotherapeutic Treatment of Hypertension J H Schultz—p 453  
\*Hypertension in Youth and Its Evaluation H Sarre—p 457  
\*Pathogenesis and Treatment of Disturbances of Myocardial Blood Perfusion W Kampmann—p 461

**Cachectic Edema in Diffused Glomerulonephritis.**—Nonnenbruch reports 4 cases of diffuse glomerulonephritis in which a soft, general edema combined with hypoproteinemia, a shift in the blood albumin picture to the left and lipoduria suggested amyloid nephrosis or diffuse glomerulonephritis with a nephrotic syndrome. Cachexia of tissues due to some other process than the nephritic syndrome was considered to be responsible for the peculiar character of the edema. The absence of lipemia was decisive in the differential diagnosis. A sparing diet is contraindicated in these cases and hunger-thirst therapy should be limited to the shortest possible period and then be replaced by a diet rich in albumin. Recovery resulted in 1 case on a diet rich in calories and albumin instituted while hypertension and edema were still present. Improvement occurred in the 3 other cases. Apparently tissue condition determines the type of edema.

**Hypertension in Youth.**—The general importance of hypertension in youth for military or labor service is overestimated. A considerable number of men with hypertension are persons with labile blood pressure. Any sort of excitement may be

the cause of their hypertension. Their functional capacity is not reduced. One should look for the basic disease in cases in which hypertension has become fixed. Diastolic pressure above 80 mm of mercury should be considered an alarming symptom. In many such cases renal hypertension or types secondary to chronic nephritis, malignant sclerosis, cystic kidney, pyelonephritis, kidney anomalies or hypertension after trauma may be demonstrated. There will be a few instances of essential hypertension in youth. The prognosis in these cases will be favorable in the absence of changes in the fundus oculi and of subjective disturbances such as headache or vertigo. Most of the time these persons will be able to work and a benign course of hypertension is to be expected.

**Pathogenesis and Treatment of Disturbances of Myocardial Blood Perfusion.**—Kampmann discusses disturbances of myocardial blood perfusion of coronary and other origin. Sclerosis and thrombosis of coronary arteries resulting in narrowing of the arterial lumen or in complete obstruction are frequent instances of the first group, but coronary stenosis may also be purely functional, as in malignant sclerosis, pale hypertension or chronic nephritis. Good results were obtained in all types of myocardial disturbances of coronary origin by restriction of fluid intake, strict dechloridation and administration of strophanthin and digitalis preparations. Administration of acetylcholine is recommended in acute cases of coronary contraction. Special reference is made to disturbances of myocardial blood perfusion previous to or during the menopause. Functional myocardial capacity was restored almost completely by regular and prolonged administration of sufficiently high doses of the follicle stimulating hormone.

**Klinische Wochenschrift, Berlin**

21 489-512 (May 30) 1942 Partial Index

- Aspects of Mitral Stenosis. E. Edens—p 489  
Vitamin Economy in Newborn and Nurslings and Its Behavior During the Growth Period up to Maturity H. Brieger—p 491  
\*Epidemiology of Typhus. H. Klose—p 498  
\*Some Observations on Clinical Aspects of Typhus. G. Liebau—p 500  
Investigations on Thyroxine Hormone with Particular Reference to Status Thymicolymphaticus. C. Bomskov—p 502

**Epidemiology of Typhus.**—Klose shows that effective destruction of lice in regions where typhus is prevalent is one of the most important procedures in the war on typhus. It is important to destroy not only the lice and their eggs but also their highly infectious excreta. The feces of lice rather than their bite is most dangerous. This has been proved by investigators and the author found it corroborated by observations in a delousing station for Russian war prisoners among whom typhus had broken out. Of the delousing personnel 78.2 per cent contracted typhus, although they were never found to harbor lice and regularly went through the delousing process. Typhus was contracted by a physician who lived in surroundings that were entirely free from lice, and who vaccinated only deloused Russian war prisoners. A man active as clerk in an office located away from the prisoners' camp likewise contracted typhus after he had worked on a card index from the camp. He had never been inside the camp and he and his surroundings were entirely free from lice. Two French prisoners of war contracted typhus after they had passed through the same delousing station which had been used by Russian prisoners among whom typhus had existed. The author thinks that the bite of infected lice could be ruled out in all these cases. He reasons that these infections must have been caused by the fecal excreta of typhus infected lice. In the dried excreta of lice the rickettsias remain viable for a long time. Whether rickettsias can enter the skin when lice excreta reach it in dust form or whether inhalation or some other ways are responsible still remains to be explained. At any rate delousing by hydrocyanic acid apparently does not kill rickettsias in the dried excreta of lice and therefore is inadequate for delousing. Hot air, currents of steam and chemical substances, when properly used will kill rickettsias, for they proved effective during the first world war.

**Clinical Observations on Typhus.**—Liebau reports the development of typhus in 23 of 25 men of the watch force of a camp for typhus infected Russian prisoners of war. The patients were between the ages of 26 and 40 and in excellent physical condition. They could bathe and change their linen



daily and they received added rations. Thus typhus was contracted by men who lived under favorable conditions, whereas typhus usually spreads in the presence of hunger and unhygienic conditions. The mortality remained comparatively low, there being only two fatalities. It is generally believed that the bite or the excreta of lice are the exclusive source of typhus, but the fact that the physician taking care of the aforementioned 23 patients contracted the disease after four weeks and never had contact with lice or their excreta seems to suggest that blood smear infection was responsible in his case. The titer of the Weil-Felix reaction varied between 1:200 and 1:20,000. The height of the titer did not parallel the severity of the clinical picture. Comparative Weil-Felix tests on the medical and nursing personnel revealed titers between 1:100 and 1:400 in 5 of 21. Of 50 soldiers who never had had contact with typhus patients 4 gave Weil-Felix titers of 1:100. The author thinks that the generally accepted belief that a titer 1:200 definitely indicates typhus requires closer inspection. The author observed considerable anemia in the majority of patients. Electrocardiographic studies revealed the possibility of late cardiac lesions. Impairment of the acoustic nerve with hardness of hearing was observed in nearly half of the patients. The treatment of typhus is still chiefly symptomatic. The author's patients found one or two daily baths of 37 to 40 C gratifying. Dryness in the throat was counteracted by infusion of isotonic solution of sodium chloride, vaporization of the room or inhalation. The diet should be fluid or purged but not too low caloric. Generous amounts of fruit and vitamins C and B<sub>1</sub> were given.

### Munchener medizinische Wochenschrift, Munich

89 71-92 (Jan 23) 1942 Partial Index

- Contribution to Problem of Cancer W. Brunnings—p 71
- Etiology of Epidemic Hepatitis H. Voegt—p 76
- Modern Therapy of Cancer G. Will—p 79
- New Knowledge About Causes and Treatment of Spontaneous Abortion W. Schultze—p 82

**Etiology of Epidemic Hepatitis**—According to Voegt the majority of investigators assume an infectious origin for epidemic hepatitis, either bacterial or virus in nature. Transmission experiments from man to man were carried out by Carrell and also by Limer with negative results. Voegt gave each of 4 persons by mouth 5 cc of duodenal juice from a patient with epidemic hepatitis. After nearly four weeks these persons exhibited signs of hepatic impairment. One of them had a subicterus of the skin and scleras. Since some reports indicate that epidemic hepatitis can be transmitted by infected human vaccines or convalescent serums, the author investigated the effect of subcutaneous or intramuscular injections of serum, plasma or hemolyzed erythrocytes on 6 additional persons, the material being obtained from patients with epidemic hepatitis. One man developed a subicterus and he and another man showed increase in the bilirubin content and a positive Takata reaction. Four women had positive Takata reactions and other signs of hepatic disturbance. The author concludes that, although he did not succeed in producing the complete picture of epidemic hepatitis, all the persons tested developed clinically demonstrable signs of hepatic impairment and a picture which resembled epidemic hepatitis.

89 161-184 (Feb 20) 1942 Partial Index

- Infectious Icterus (Epidemic Hepatitis) K. Gutzeit—p 161
- Mortality of Pneumonia as Measure of Value of Treatment W. Bratschkow—p 164
- Experiences with Lumbar Sympathectomy in Endangitis Obliterans of Vessels of Legs and Feet L. Schorch—p 166
- Temporary Exclusion of Sympathetic in Treatment of Ulcers of Extremities D. Philippides—p 174

89 185-206 (Feb 27) 1942 Partial Index

- Infectious Icterus (Epidemic Hepatitis) K. Gutzeit—p 185
- Diagnosis and Treatment of Trichomias W. Meisner—p 190
- Precancerosis of Colon and Rectum H. Westhues—p 192
- Renal Impairment Following Use of Sulfapyridine R. Enger and H. Wendel—p 196

**Infectious Icterus (Epidemic Hepatitis)**—According to Gutzeit, Weil's disease and the so-called field, swamp or harvest fever are caused by organisms of the genus *Leptospira*. The major part of the discussion is concerned with the third type

of icterus, the infectious nature of which can be regarded as established although its etiologic agent is still unknown. The author calls attention to increased frequency of epidemic hepatitis during wars. It appears particularly among soldiers. The clinical picture is characterized by three stages: the febrile, the gastrointestinal stage, which is followed by a phase of relative improvement, and the icteric phase, during which the gastrointestinal symptoms become prominent once more. In some cases jaundice fails to appear or is so mild that it is not recognized. The majority of cases remain mild and uncomplicated, but occasionally epidemic hepatitis may be followed by acute yellow atrophy. The generally slow increase in epidemic curves and the fact that they never occur with explosive suddenness indicate that water and food infections are not responsible. The question arose whether the disease might not be a sequel of dysentery or paratyphoid. On military fronts where the jaundice appeared Flexner dysentery had often preceded it by one or two months. Some of the men who developed jaundice had had dysentery, but others had not. The etiologic significance of dysentery is contradicted by the fact that at the time of the greatest prevalence of dysentery in Greece and Russia there was no jaundice. Although there have been occasional agglutinations with paratyphoid in patients with epidemic hepatitis, bacteriologic and serologic investigations were generally negative. Transmission experiments suggest the virus nature of the agent. Epidemic hepatitis likewise occurs after injection of convalescent measles serum, of yellow fever vaccine and of smallpox vaccine. Rest in bed and dietetic measures are most important in the treatment of the condition.

### Zentralblatt für Chirurgie, Leipzig

69 769-816 (May 9) 1942

- Effects on Speech in 300 Plastic Operations on Palate G. Axhausen—p 770
- Intrathoracic Bronchial Cysts Operation on Giant Bronchial Cyst H. Klose—p 776
- Spontaneous Cure of Malignant Myeloma G. Beyer—p 781
- Fibrosclerotic Peripneumonia a Rare Entity H. Dieckow—p 790
- Two Cases of Total Umbilical Fistula A. Cserey Pechany—p 795
- Spontaneous Perforation of a Swallowed Needle Through Abdominal Walls Without Suppuration and Peritoneal Symptoms N. Gunttscheff—p 797

**Spontaneous Cure of Myeloma**—Beyer reports the history of a man aged 65 who had a plasmacellular myeloma in one clavicle and in one rib. The focus in the clavicle was removed but the patient refused the removal of the other lesion. The period of observation was about two years. During this time no relapse occurred in the clavicle, and the focus in the rib regressed spontaneously. This case raised the question of the pathologic nature of the myelomas. On the basis of the microscopic structure of the removed myeloma, the author agrees with those who classify myeloma with the malignant growths. Even if myeloma is regarded as a systemic disease it must be admitted that it has the behavior of a malignant neoplasm, it has an expansive, infiltrative and destructive growth, it may cause metastases and it is frequently fatal. With regard to the case under consideration, the question arises whether the cure of the costal tumor represents the spontaneous cure of a second primary tumor or the dying out of a metastasis following removal of the primary neoplasm. That the two tumors appeared simultaneously and that myelomas are often multiple and rarely produce metastases speak against the metastatic character of the costal tumor, but the cure could speak for the metastatic nature. If, however, the costal neoplasm is a second primary tumor, the spontaneous cure is even more surprising.

**Perforation of Swallowed Needle Without Peritoneal Symptoms**—Gunttscheff reports the case of a boy of 14 months who had swallowed a needle 5 cm in length. During the ensuing days the food intake was small and the child lost weight. Between the seventh and eighth days the eye end of the needle appeared in the skin. It had spontaneously perforated the abdominal walls. There was no secretion from the perforation canal, and peritoneal symptoms did not appear.

## Book Notices

**The Dental Treatment of Maxillofacial Injuries** By W Kelsey Fry M.C. M.R.C.S. L.R.C.P. Consulting Dental Surgeon to the Royal Air Force P. Rae Shepherd L.D.S. R.C.S. Dental Surgeon East Grinstead Maxillofacial Unit Alan C McLeod D.D.S. B.Sc. L.D.S. Dental Surgeon East Grinstead Maxillofacial Unit and Gilbert J Parfitt M.R.C.S. L.R.C.P., L.D.S. Dental Surgeon East Grinstead Maxillofacial Unit With foreword by Professor F.R. Fraser M.D. F.R.C.P. Director General Emergency Medical Service Cloth Price \$4.50 Pp 250 with 333 illustrations Philadelphia & Montreal J.B. Lippincott Company 1943

The authors have had a wide experience in the treatment of fractures of the jaws both in civilian and in military practice. The present volume is based chiefly on the work of the maxillofacial unit at the East Grinstead Military Hospital in England. Pathologic considerations in maxillofacial injuries receive adequate attention, and complications such as infection, shock, hemorrhage and associated head lesions are given due consideration. The greater part of the book is concerned with the diagnosis and various methods of fixation of fractures of the jaws. Every conceivable type of jaw fracture is mentioned and discussed in detail, and the appropriate methods of fixation for each are described. While the authors include a description of treatment by the use of dental wire ligatures for most fractures in military practice they show a distinct preference for metal cap splints on the teeth. Provided as they are with adequate facilities and experienced technicians for the construction of these appliances, their preference is not surprising, although the alleged damage to teeth by the use of wires is somewhat exaggerated. Adequate but cautious attention is given to the use of skeletal pin fixation for fractures of the mandible. The book is highly recommended as virtually indispensable to those who expect to care for large numbers of jaw fractures in military practice.

**Anopheles Gambiae in Brazil 1930 to 1940** By Fred L. Soper and D. Bruce Wilson. Cloth. Pp 262 with 75 illustrations. New York: Rockefeller Foundation 1943.

In describing the invasion of Brazil by *Anopheles gambiae* in 1930, the devastating outbreak of malaria caused by it in 1938 and the ultimate eradication of the species from its spreading focus in northeastern Brazil, Soper and Wilson have described, albeit in scientific form, one of the most dramatic episodes in public health history. Few persons outside the devastated area were aware during this period that the fate of a large section of the Western Hemisphere hung in a delicate balance, menaced by the most serious disease threat of its history. The authors, who played a vital role in the successful campaign to bring *A. gambiae* under control and later to exterminate it from its "beachhead" in the Western Hemisphere, have written an authoritative and semi-official account of this program carried on jointly by the Brazilian government and the Rockefeller Foundation. After a brief description of *A. gambiae* and its habits and of the terrain of northeastern Brazil, there follows an account of the discovery of the species around Natal in 1930 and its spread and ultimate fatal invasion of the states of Ceara and Rio Grande do Norte, where it accounted for 15,000 to 20,000 deaths in one season. The bulk of the volume deals with the successful control program. The volume is of tremendous value in recording for posterity the details of a noteworthy public health accomplishment. As such it is one of the most valuable documents published in years and merits the careful study of all students of public health. Of even greater significance is its value in showing what can be accomplished in the field of disease prevention if funds and public support are provided. It is to be regretted that the volume will not be read by all who are responsible for determining public policy politicians as well as scientists.

**Kinesthetic Bandaging Including Splints and Protective Dressings: The Kinesthetic Method of Visual Teaching** By Seymour W. Meyer B.S. M.S. M.D. Cloth. Price \$3.50 Pp 310 with 510 illustrations. Philadelphia: F.A. Davis Company 1943.

The simplicity of style makes this book of great value in teaching. The diagrams are instructive. The demonstrations are easily understood. The illustrations are clear and concise. Each turn of bandage is numbered so that its position and course can be easily followed. The book should be of value to

Army and Navy Medical Corps, Red Cross workers, general practitioners, interns, medical students, nurses and laymen. The author perceives the human body as a composite of but three geometric figures, viz ovoids, cylinders and truncated cones. He divides the body into fifteen parts, which fall into these three categories. The fundamental principles applicable to each group are given in detail. The illustrations contain numbers of each constituent of the bandage, and arrows indicate their directions. The description of the scultetus binder—its manufacture, uses and technique of application—are excellent. The Velpeau dressing is clearly demonstrated. The numerous uses of the triangular bandage are illustrated. Adhesive plaster dressings are added. The sections on splints might have been omitted without loss. In the section on plaster of paris the author made an unfortunate choice of cast cutter. In many capable hands it is a dangerous instrument.

**Personal and Community Health** By C.E. Turner A.M. Sc.D. Dr.P.H. Professor of Public Health in the Massachusetts Institute of Technology Boston. Seventh edition. Fabrikoid. Price \$3.50 Pp 585 with illustrations. St. Louis: C.V. Mosby Company 1943.

This book is prepared for students at various college levels. It is a comprehensive extensively documented treatise on personal and community phases of modern health problems. Its approach is that of combined anatomy physiology and hygiene. The effort is made in each instance, of which the discussion of digestion is a typical example, to furnish the necessary information on structure of the organs comprising the digestive system, their function and interrelationship and the hygiene of living in the light of these facts. A similar approach is employed for each of the principal bodily functions. The chapters on nutrition, digestion, respiration, mental hygiene, foot hygiene, heredity and health, narcotics and stimulants, to choose but a few from the section on personal health, indicate the functional approach of the book. In part II, dealing with community health, a similar approach is maintained. As in previous editions, the book is comprehensive and accurate. It has been improved over previous editions in more modern approach to illustrations and in readability. A particularly valuable feature is the extensive and well selected list of references at the end of each chapter. Tables and diagrams, as well as photographic illustrations, are numerous, clear, attractive and well labeled. A few well selected color plates add greatly to the book.

**Handbook on Physical Fitness for Students in Colleges and Universities** Prepared by a committee appointed by the U.S. Commissioner of Education with the collaboration of the U.S. Army the U.S. Navy the U.S. Public Health Service and the Physical Fitness Division of the Office of Defense Health and Welfare Services. Federal Security Agency U.S. Office of Education. Paper. Price 25 cents Pp 140 with illustrations. Washington D.C. Supt. of Doc. Government Printing Office 1943.

The committee which prepared this pamphlet on physical fitness is composed predominantly of men and women interested primarily in physical education and physical training rather than of physicians and physiologists. The contents consequently, emphasize the technical aspects of sports and exercises and their immediate effect on the muscular and physical development of men and women. This handbook should be of special value to the physical educators for whom it is unquestionably designed and it will be a useful reference also for physicians on whom the ultimate responsibility for the prescribing and limiting of violent physical exertion should rest.

**Biology of Acarus Scabiei** By Reuben Friedman M.D. Associate Professor of Dermatology and Syphilology Temple University School of Medicine Philadelphia. Cloth. Price \$3 Pp 183 with 112 illustrations. New York: Froben Press, 1942.

This has many excellent features. It is timely because scabies always assumes greater importance in wartime. The book is rich in references and in illustrations. The historical facts are critically considered and presented in an interesting manner and all knowledge of the subject is brought down to date. Because of its limited scope it will have particular value as a source book only for those interested in entomology. The general reader, however, will find it worthwhile reading just as were the author's companion books *The Emperor's Itch* and *Scabies, Civil and Military*.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### RELAXED INGUINAL RINGS AND HERNIA

To the Editor—There has been much discussion of relaxed inguinal rings. Da Costa's Surgery (ed 9, p 1124) states that "In a healthy man the external ring should admit the tip of the little finger but not that of the index finger. If the end of the index finger can be made to enter the ring that aperture is dilated and even if there is no hernia in the canal, in the future a hernia will probably descend." If this was to be followed as a standard, then a large percentage of inguinal rings would probably be classified as relaxed. I have seen men, turned down by one branch of the service because of so-called relaxed rings, promptly accepted at induction centers by the Army. Some of us have passed men for industrial plants or an preliminary physical examinations for selective service, only to have them turned down in turn by induction centers because of relaxed rings. Recently one of us was asked to examine a man who had spent ten months in the Army, been discharged to the enlisted reserve because he was over 38 and who then had taken a physical examination for the volunteer Coast Guard Auxiliary. He was told by the examining physician (U S P H S) that he had relaxed rings, these same rings had survived two army examinations and were not relaxed in the opinion of the private physician consulted. I should persons with inguinal rings which readily admit the index finger and produce a moderate impulse on coughing be classified as having relaxed rings and be required to wear a belt, such as the McIntosh, if engaged in work of a strenuous nature? Should they be considered as potential subjects of hernia from an industrial standpoint? 2 When a small hernia exists (ring enlarged and an coughing visceral impulse felt which follows finger on withdrawal) will the wearing of a support of the McIntosh type prove of much help as far as further progression is concerned if the man is engaged in work which requires a fair amount of effort? 3 Do a large percentage of those in the upper age brackets (50 and over) have relaxed rings and relaxed inguinal support in general as an incident of age? Should individuals in this age group be required to wear a McIntosh belt if the rings are relaxed and they are to engage in fairly strenuous activities? 4 Should young persons with small asymptomatic congenital umbilical hernias be required to wear a support if engaged in strenuous work? Does the same apply to those of moderate size? To add to the confusion, frequently a man will be told in one industrial plant that he has relaxed rings and when his changes employment later is passed in another plant as having normal rings.

M D, Louisiana

ANSWER—The question of what constitutes a relaxed inguinal ring and the question of the possibility of the development of a hernia in the future cannot be answered categorically. In these problems one must rely heavily on clinical experience and judgment. A number of factors must be considered, such as the age of the patient, the general health of the patient, the muscular development of the abdominal wall, obesity, constipation and other conditions which tend to affect the intra-abdominal pressure.

Most surgeons today do not subscribe to Da Costa's opinion with regard to determination of a relaxed inguinal ring by the finger test. An external inguinal ring may admit two fingers and may not lead to the development of hernia. The question of the development of an indirect inguinal hernia is determined by the degree of obliteration of the processus vaginalis testis and the development of the abdominal musculature. The existence of an inguinal hernia is best determined by seeing a bulge on coughing or on asking the subject to spread his leg wide and then to lift a weight. If no impulse (bombardment) is felt by the examining finger within the ring while the subject is coughing, the question of hernia need not be considered.

In answer to the specific questions: 1 Such a person does not require the wearing of a truss. The term "potential hernia" is not admissible. Every human being may be considered to have "potential hernia."

2 A properly applied truss would be indicated, for it would at least prevent further descent and possible strangulation. However, the proper treatment for "a small hernia" is the operative treatment.

3 A large percentage of people in the upper age brackets have relaxed rings and relaxed inguinal support. They need not wear a truss, since the truss will not affect the development of a hernia if one is going to take place.

4 Small, asymptomatic, congenital, umbilical hernia in men doing strenuous work constitutes an indication for a properly applied belt. Men with "moderate size" umbilical hernia should be treated by operative intervention.

### TREATMENT OF SAPHENOUS PHLEBITIS

To the Editor—Recently I saw a man with thrombophlebitis of the internal saphenous vein which extended from the right mid thigh to the fossa ovalis, where there was a swollen, indurated mass about 1 inch in diameter which was part of the aforementioned vein. At the time I saw the patient the lesion was quiescent, as there was no fever or leukocytosis and there was no redness or swelling about the vein. The patient had had varicose veins in the left leg for fifteen years and for the past five years he had had some swelling of ankle and pain in leg on standing for any length of time. About three weeks ago he began to have severe pain and tenderness along the inner aspect of the right thigh, which persisted for five to six days and then gradually began to subside. He stated that previous to the present illness he was able to squeeze out the lump in his thigh but after this illness the lump became hard and could not be reduced. It is my belief that the patient had a varix in the internal saphenous vein just as it entered the fossa ovalis and that it became hard following the thrombophlebitis. At present there is a hard, cordlike, tortuous structure which extends from this lump down toward the inner aspect of the thigh for a distance of 12 inches following the course of the internal saphenous vein. As far as I can make out there is no blood flowing through this at the present time. Should this be left alone since it is already quiescent? Should a ligation be attempted in order to prevent pulmonary complications in the event of an exacerbation of the thrombophlebitis? I should also like to have an opinion on the proper treatment of other similar cases of thrombophlebitis of the internal saphenous vein which do not rise quite so high. Should these patients have ligation and injection, and, if so, what would be the time interval after subsidence of symptoms, and what laboratory data would you suggest in addition to clinical evidence of quiescence? In the American Medical Association manual on varicose veins, ligation and injection of acute phlebitis are contraindicated but nothing is said of the management of the patient after subsidence of symptoms.

M D, Pennsylvania

ANSWER—The treatment of saphenous phlebitis occurring in preexisting varicosities differs in some respects from that employed in patients not suffering from phlebitis. Ligation of the saphenous vein at its junction with the femoral in the presence of saphenous thrombosis not only relieves pain but hastens the subsidence of inflammation and prevents early recanalization of the soft red thrombi. It is one of the clear-cut indications for ligation of the saphenous vein as indicated in the American Medical Association manual on varicose veins, table 1, page 16.

It must be realized, however, that the surgeon may encounter considerable periphlebitis, lymphangitis and enlargement of inguinal lymph glands in such a stage which make dissection more difficult. He may also find that the vein is thrombosed clear up to the saphenofemoral junction, which is often bulbous. If a thrombus is encountered at this level, the proximal stump should be aspirated with a suction tip, since thrombi may extend from the saphenous bulb into the femoral vein and float freely in the lumen or adhere to the wall.

While the ligation of the saphenous vein can and should be done in the acute stage, injections of any sort are better postponed until the periphlebitis, hyperemia and induration have definitely subsided, the injections activate a subsiding phlebitis and may prolong convalescence. To hasten the regression of phlebitis, elastic support, small doses of x-rays or injections of sodium tetrathionate are useful. The patient may be ambulatory after a day or two of hospitalization. Injections are started several weeks later, when the edema, hyperemia and induration around the superficial veins have subsided. The clinical findings are more valuable than any laboratory aid, but a sedimentation rate or a heparin tolerance test (*Surg, Gynec & Obst* 77 31 [July] 1943) may be of some help to gage the activity of the process.

### ALCOHOL INGESTION AND TREATMENT OF SYPHILIS

To the Editor—Would the ingestion of excessive amounts of alcohol daily appreciably affect the results of antisyphilitic treatment? Would the daily ingestion of excessive amounts of alcohol by a patient receiving antisyphilitic treatment for a period of two years be a cause for the persistence of a positive Wassermann reaction? The Wassermann reaction of a patient of mine who answers this description was 3 plus six weeks ago. At a clinic four weeks later she had another Wassermann test, after having ceased to drink alcohol as ordered, and the Wassermann reaction was negative. How would you explain this strange serologic reversal?

M D, New York

ANSWER—Except as far as excessive alcoholism may affect the patient's ability to adhere to a regular treatment schedule, there is no adequate scientific information that alcohol affects the therapeutic efficacy of antisyphilitic treatment.

Alcoholism is not cause for the persistence of a positive blood serologic test.

The reversal of the blood test in the patient described can be attributed to nothing more important than coincidence.

## LATE NEUROSYPHILIS AND TRYPARSAMIDE

To the Editor—Several problems have arisen concerning our antisyphilitic treatment and I should like an opinion on them. 1. Should a patient with dementia paralytica who for some reason or other (excluding definite sensitivity or kidney and liver disease) fails physically to the extent that he becomes bedridden or comatose be continued on tryparsamide treatment? It is assumed that the patient has not received his full fifty weeks of arsenicals. 2. If a patient with dementia paralytica has early optic atrophy should he be given tryparsamide treatment if he has never had tryparsamide? 3. If a patient has complete optic atrophy with total blindness regardless of etiology should tryparsamide be given? 4. Is advanced age a contraindication to treatment? M D California

ANSWER.—1 The results of fever therapy for patients with dementia paralytica who have become bedridden and comatose have been in the main unsatisfactory. However, every now and then one such patient is materially improved by either malaria or hyperthermy. In a study reported by the subcommittee of the Cooperative Clinic Group, the comparative value of the two types of fever therapy showed that hyperthermy treatment followed by tryparsamide offered the patient with advanced dementia paralytica a higher incidence of improvement than did malarial therapy. If the patient has not had fever therapy he would seem to be entitled to it, and if he has already had fever therapy the continued use of tryparsamide and a bismuth compound for a minimum of one hundred injections of each drug is warranted.

2 A patient with dementia paralytica who has evidence of early optic atrophy should not be given tryparsamide but preferably should be given the advantage of fever therapy followed by intraspinal measures. The combination of fever therapy and intraspinal treatment with either a soluble mercury or a bismuth preparation has offered the highest incidence of arrest of the loss of vision. This incidence approximates 15 per cent, and low as it seems to be it is apparently the safest program for patients of this type.

3 If the optic atrophy has advanced to the point of total blindness and the patient is manifesting signs of mental change, he may be given tryparsamide. On the other hand, if evidence of dementia paralytica is not present in other words, an optic atrophy in association with tabes dorsalis, continued use of bismuth compounds or iodides and small doses of an arsenical are warranted. Tryparsamide should be limited to patients showing mental changes but not with early involvement of the optic tract.

4 Advanced age is not necessarily a contraindication to the use of tryparsamide. In fact, small doses of tryparsamide may be given to elderly persons with neurosyphilis of either the parietic or the meningovascular type with definite advantage. The dosage should be small and the patient watched carefully for objective and subjective visual complications.

## SEVERE BACKACHE AND INFANTILE UTERUS

To the Editor—A married woman aged 25 came to my office on Aug. 21, 1942 complaining of severe low back pain radiating into both lower quadrants. Examination was negative except for an infantile cervix and uterus and cervical os which was almost completely occluded. The uterus was sharply anteverted. I performed an electrocoagulation of the cervix and dilation and curettage on Sept. 1, 1942. The patient enjoyed relief from all symptoms for a period of six months at which time there was a recurrence of all symptoms. On June 16, 1943 the opening of the cervix would scarcely admit a fine examining probe and I repeated the previous operation and coaxed out the cervix to 1 cm in diameter. She was relieved only slightly from this second operation. On Sept. 4, 1943 she came to my office and reported that all her previous symptoms had returned in greater severity than she had ever experienced. She stated that her last menstrual period was extremely painful and at the time of her last menstruation little menstrual fluid passed. The uterus remains small and in the same anteverted position. The cervix remains small and I am unable to pass the smallest examining probe. Her suffering is so great that hysterectomy is being considered. Will you kindly advise any measure that I might employ to relieve her condition so that such radical procedure will be unnecessary?

D. K. Matthews M.D. Dresden, Ohio

ANSWER.—In spite of the fact that the patient's symptoms were absent for six months following the first electrocoagulation, dilation and curettage a careful examination including the use of roentgenograms should be made of the patient's back, bony pelvis, joints, legs and feet in order to rule out an orthopedic or other condition. The pelvic organs are by no means responsible for most backaches in women.

Before a hysterectomy is contemplated in a case like this, the following may be done. Under anesthesia (intravenous pentothal sodium will be satisfactory) the cervical canal should be dilated up to at least No. 10, preferably No. 12 Hegar dilator. Then a hard rubber or metal pessary of the Wylie type should be placed in the cervical canal and sutured in place.

The pessary should be left in the cervix for three months. Almost certainly at the end of this time the cervical canal will be sufficiently large to permit the escape of blood without discomfort. During the time the pessary is in the cervix the menstrual blood will readily come out.

## PROLONGED FEBRILE ILLNESS WITH POSITIVE WASSERMANN REACTION

To the Editor—A woman aged 23 while a senior in college two years ago majoring in bacteriology and handling live cultures of many different pathogenic organisms suffered a gradual onset of malaise, joint pains and slight fever which slowly became more severe. A complete and apparently adequate examination including agglutination reactions for *Brucella*, *Typhimurium*, *Salmonella* and other pathogens was negative except that a palpable spleen and positive Wassermann and Kahn reactions were present. She was given two doses of arsenicals and developed an encephalitis (comatose for a week) which cleared up but left her with a partial hemiplegia. Soon after this while still in bed she developed pneumonia complicated by an empyema requiring a rib resection. In spite of all this she recovered but continued to have an enlarged spleen almost daily temperature increases to about 102° F. with occasional bouts of joint pains and enlargements and a gradual loss of weight from 125 to 55 pounds (56.7 to 25 Kg.). At one time a course of chemotherapy exact drug unknown, resulted in severe dermal reactions with great increase in temperature and oral and pharyngeal lesions suggesting a granulocytopenia for which transfusions were given. After this a bismuth compound was given but its administration resulted in much nausea and vomiting. Her serologic reactions for syphilis continued to remain strongly positive. Her fever and joint symptoms have continued for two years. The patient's parents are both in excellent health clinically and serologically negative for syphilis. She has no siblings. There is no history suggestive of secondaries or of a genital or extragenital primary lesion. The patient, an intelligent, frank and alert young woman states that she did not have any intercourse and examination indicates that she is a virgin. Recent Wassermann and Kahn tests on two occasions showed strongly positive reactions. Examination now reveals quite a large spleen, severe emaciation, partial left hemiplegia and slight contractures of the joints on the right side, none of which are enlarged. Lymph nodes, heart and lungs, nose and throat and other systems are essentially normal. The patient is able to stand only momentarily and hence is confined to bed most of the time. An x-ray film of the chest taken a few months ago was said to be normal. Laboratory examination reveals hemoglobin 11 Gm. per hundred cubic centimeters and white blood cell count 8700 with an essentially normal differential. Blood culture is negative. Blood agglutinations for *Brucella*, *Salmonella*, *Typhimurium* and dysentery organisms were negative. Several Mantoux tests made before I saw her were reported as negative. The patient has never been out of the state of Washington, hence malaria and other tropical diseases hardly need consideration. She has recently gained weight and felt somewhat better using physical therapy, high caloric diets, sedatives and antipyretics. In view of the prolonged course and other aspects I have about decided that rheumatoid arthritis is the most likely diagnosis and am arranging with her former bacteriology teacher to have a series of agglutination reactions with the various Lancefield types of streptococci. The questions I should like to ask are: Does syphilis the great imitator ever give such a clinical picture over such a prolonged time? Isn't it probable that the chronic infection present is causing the serologic reactions to be false positives? What other diseases besides abdominal Hodgkin's disease, histoplasmosis of Darling, periarthritis nodosa, chronic *Brucella* infection and some of the more rare spirochetal diseases should one consider? I have neglected to add that a tonsillectomy was without effect on the course of this disorder and that all teeth have been x-rayed and seem normal. M.D. Washington

ANSWER.—Even the excellent description provided of this patient does not permit many more definite suggestions than those which have already been made by the inquirer. It is highly improbable that syphilis could be causing this picture and much more likely that the illness is due to another cause which has produced false positive serologic reactions of the blood. In respect to syphilis and since the patient has suffered a cerebral vascular accident it is of course essential to examine the spinal fluid—the one examination which does not appear yet to have been made. If the spinal fluid shows a positive Wassermann reaction, one may with much more certainty feel reasonably sure that the patient does have syphilis even though this may not be the cause of her long continued febrile illness. False positive reactions in the spinal fluid produced by systemic infections (i.e. outside the nervous system) other than syphilis are exceedingly uncommon and probably do not occur.

One of the best recent articles on the diagnosis of unexplained long continuing fever is that of Hamman and Wainwright (*Bull. Johns Hopkins Hosp.* 58:109 [Feb.] 307 [April] 1936). Among those causes which might conceivably produce a symptom complex such as the one described are: brucellosis, tuberculosis, Hodgkin's disease, rheumatic fever, malignant tumor, typhoid, amebiasis and localized or generalized septic infections. Occasional instances of long continued fever may also be due to multiple sclerosis or in rare instances to hysteria or other psychogenic causes. These are of course in addition to periarthritis nodosa and histoplasmosis as named by the inquirer.

It would seem desirable to obtain a muscle biopsy to rule out periarthritis (and probably also trichiniasis, although this seems unlikely in view of the normal differential blood count) and in respect of brucellosis to have performed an opsonic index and cutaneous tests. Has an electrocardiogram been done? This might be helpful in respect to rheumatic fever.

If the symptom complex is due to syphilis, which seems the least likely of the possibilities enumerated, the fever, if not the other symptoms, should promptly disappear on the administration of bismuth and potassium iodide.

### CRUSTING OF NASAL MUCOUS MEMBRANE AND EXPOSURE TO DUSTS

*To the Editor*—A man aged 37 has a perforation of the nasal septum about 4 cm long. He is in good health and has no complaints. The Wassermann reaction is negative. He has been in glass making for eight or ten years and has been exposed to the following chemicals:

	Percentages
Sand	99 + silicon dioxide
Soda ash	99 + sodium carbonate
Salt cake	99 sodium sulfate
Limestone	99 + calcium carbonate
Dolomite	54 calcium carbonate
	44 magnesium carbonate
Feldspar	20 aluminum oxide
	65 silica
	15 sodium and potassium oxides
Arsenic Coal	96 + arsenic trioxide
	common blacksmith coal

Hydrochloric acid was used to dip the glass in formerly. He had three injuries to his nose about fifteen years ago, and one side was blocked for a long time afterward. Since the perforation has crusted and is a bit swollen and might be increasing in size, it would be desirable to find the cause. Are any of the chemicals named in dust form likely to have caused the trouble? What is the possibility of a cartilage having become dislocated to the extent of atrophy and sloughing? M D, Arkansas

*ANSWER*—A concentration of any or all of the chemicals mentioned in the dust inhaled over a period of time could cause sufficient irritation and dryness of the nasal mucous membrane to predispose to crusting. This would undoubtedly be accelerated by the presence of a deviated septum resulting from previous trauma. The exposed angle of the fractured or luxated cartilage would be the point at which the crusting would first be manifest, and this would in time lead to ulceration and finally perforation of the septum. Continued exposure to dust laden air would only result in increased crusting about the margins of the perforation which increases in size from erosion. It is not uncommon to find the external nose red and swollen at times in cases of this sort and therapy would be only moderately successful as long as the man continues to work in the same atmosphere.

### DELIVERY ON LEFT SIDE

*To the Editor*—Can you give me any information with regard to left side delivery? I have been using this method for thirty years with rarely any perineal tears, much to the gratification of my patients. I should like to know of the experiences of other physicians using this method in order to improve on this method as I have worked it out.

Roy G. Perham, M.D., Hasbrouck Heights, N. J.

*ANSWER*—The delivery of the patient on her left side was a favorite method some years ago. It is still quite popular in Great Britain. However, it is practiced today by few physicians in the United States. The abandonment of this position for delivery probably resulted from the fact that many primiparas have episiotomies prior to delivery.

### WORK CONDITIONS OF PATIENTS WITH SILICOSIS

*To the Editor*—Is it reasonably safe for a molder with second stage silicosis to continue working in the foundry which now uses a parting sand free from silica? The company indirectly claims that the silicosis is no more apt to progress under the present conditions than it would if the patient should be removed from the foundry entirely. M D, Michigan

*ANSWER*—The advice to silicotic subjects about continuing work in their former occupations is governed by their age, local conditions in the plants and employment policies. From a strictly medical point of view, men over 45 who have developed silicosis slowly over a period of twenty or more years of exposure can return to work in a clean foundry without appreciable danger. Younger men and particularly those who have developed their silicosis within a period of five or six years are probably unusually "susceptible" to dust and should be removed to some other job. The legal aspects of the problem may necessitate removal of all silicotic persons from any further exposure regardless of its severity, for compensation officials may hold

that exposures, however slight, are dangerous to preestablished silicosis. To permit the silicotic to work who are perfectly able to do so may create financial liabilities which the employer is unwilling to accept.

### SEVERE PELVIC PAIN FROM INTERCOURSE

*To the Editor*—I have treated a nullipara aged 38 for two years, mostly with ovarian injections and prescriptions of diethylstilbestrol, for the climacteric caused by radiation treatments at the age of 32. She is about over that condition but continues to have her chief complaint of severe pelvic pain on intercourse, which she claims appeared a year or so after the irradiation. At the age of 32 she claims to have had radium treatments inserted intravaginally for uterine hemorrhage, and one year later she had three weeks of x-ray treatments of fifteen minutes each on alternate days. She stopped flowing, lost the pubic and vulval hair and now has suprapubic and vaginal telangiectasis. Bimanual examination elicits a small uterus and excruciating pain into the center of the pelvis on pressure. The same pain is felt on pressure against a small closed cervix with a cotton ball on dressing forceps and is not lessened with the same procedure following coagulation of the cervix and vaginal vault. Is this pain due to a condition in the shrunken uterus or nerves in possibly taut broad ligaments? What could be done to relieve it?

L. S. Besson, M.D., Portland, Ore.

*ANSWER*—The pain following irradiation is probably due to a parametritis. The scar tissue has formed in the parametria and when the uterus is moved pain is elicited. Heat applied by means of the Elliot apparatus may be helpful.

Possibly there is some atrophy of the vaginal mucosa which will respond to estrogen suppositories. Vaginal smears should aid in diagnosing this condition.

### LENS SHAPES

*To the Editor*—In *Queries and Minor Notes* in The Journal, September 18, there are several questions on lenses asked by Dr. H. W. Gorton, the answers to which I think need a little revision. Dr. Gorton asks: (4) Is there any advantage of a flat, clear lens over a curved clear lens? and (5) Must curved lens glasses be fitted more exactly in relation to the eye than a flat lens? The answer to 4 and 5 contains these statements:

"Because of the eyelashes, the curved glass goggles can be fitted closer to the eyes and give a greater field of vision" also "we might state that a curved lens is capable of rendering more space for eyelashes, thus permitting the goggle to be fitted close to exclude foreign matter."

The idea that a curved lens, i.e., one having a concave surface facing the eye, can be placed closer to the eye than a flat lens, i.e., one having a plano or convex surface facing the eye, is prevalent, but it is not quite correct. If a double convex spherical lens or a plano convex cylindrical lens is placed before the eye and placed as close to the eye as the lashes will permit, making the lens in meniscus form with the concave surface facing the eye, will not permit the lens to be set nearer to the eye. The distance of a lens from the eye is taken to be the distance from the apex of the cornea to the center of the posterior surface of the lens when the eye looks straight ahead. If the center of the lens just clears the lashes, then the center of any other lens, whatever its form, cannot be placed any nearer to the cornea. The meniscus form of a lens seems to be nearer to the eye because its concave inner surface follows partly the contour of the eye and sort of "hugs" the eye. The peripheral parts of a meniscus lens are nearer to the eye than the peripheral parts of a double convex or plano convex lens. The peripheral parts of the latter stand off from the eye and therefore such a lens rather than the meniscus "is capable of rendering more space for the eyelashes."

This communication is not intended to deny the superiority in general of the meniscus lens over the flat lens, though in some cases, as in some cataract lenses, it is preferable to use a flat plano convex or a flat compound (toric) type. The principal objective is to correct a widely held wrong notion which sometimes leads to other errors. For instance, if a trial lens which is double convex corrects an eye, then any lens, plano or meniscus, having the same vertex power will correct the eye if placed at the same distance from the cornea. If the trial lens is placed as close to the eye as the lashes will permit, the physician can safely prescribe that lens to be made up in meniscus form, and if this lens is also placed as close to the eye as the lashes will permit, this lens will have exactly the same effect as the trial lens. In the course of teaching physiological optics I have come across many a doctor who was worried about prescribing a meniscus lens from his double convex trial lens because he had the idea that the former could be placed closer to the eye and would therefore lose in effectivity. Some would on a hit or miss guess, add on a plus 0.25 spherical lens for this reason, only to find later that the lens was too strong. Joseph I. Pascal, M.D., New York.

### IDENTIFICATION OF NEWBORN

*To the Editor*—In The Journal, September 25, I noticed a question from Dr. H. Palmer, research engineer, Hospital Bureau of Standards and Supplies, New York, regarding methods of identification of newborn infants. I should like to call attention to research work of mine covering a period of two years beginning in 1932. This work was published in the *Illinois State Medical Journal* in April 1936, in *Fingerprint Magazine* in August 1936, in *Hospitals*, official publication of the American Hospital Association, in January 1937 and in the *Modern Hospital* in June 1936. In January 1936 I demonstrated this method at the Scientific Exhibit of the American Medical Association in Cleveland and at the Illinois State Society convention at Springfield. Gilbert Palmer Pond, M.D., Oak Park, Ill.



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## PENICILLIN THERAPY OF SURGICAL INFECTIONS IN THE U S ARMY

A REPORT

MAJOR CHAMP LYONS

MEDICAL CORPS, ARMY OF THE UNITED STATES

On April 1, 1943 the Office of the Surgeon General, U S Army, sponsored a pilot unit for penicillin therapy at the Bushnell General Hospital at Brigham City, Utah. A second unit was established at Halloran General Hospital, Staten Island, New York, on June 3, 1943. Both of these units have functioned as "schools" in penicillin therapy, and selected medical officers have been trained for one month periods to use penicillin in accordance with an overall program seeking definition of the effectiveness of the drug in surgical infections. It is the purpose of this report to summarize the experience of these trained observers as reported from several general hospitals within the Zone of the Interior.

During this period of evaluation of a new drug it has seemed wise to concentrate experience as far as possible. Each general hospital has set aside a ward unit for penicillin therapy under direction of a trained medical officer and the chief of the surgical service. With few exceptions these wards have provided single rooms or cubicles for each patient. Surgical dressings have been done under operating room conditions. Patients and attendants have been masked, dressers have been scrubbed, gowned and gloved, and individual sterile dressing packets of instruments have been used. Every effort has been taken to prevent cross infection and secondary contamination of wounds.

The work reported herein was done under the auspices of the Office of the Surgeon General, U S Army and with the cooperation of the Committee of Medical Research of the Office of Scientific Research and Development.

The clinical work has been directed by Lieut. F W Cooper, M C, Ashford General Hospital; Lieut. Col R B Grant Jr, M C, Brooke General Hospital; Lieut. Col H G Hollenberg, M C, Lieut. Col F B Queen, M C, Major J E L Keyes, M C, Major J M Walker, M C, Capt T F Barrett, M C, Capt A J Ingram, M C, and Capt. W J Morginson, M C, Bushnell General Hospital; Lieut. Col V S Johnson, M C, Major G K Carpenter, M C, and Capt K F Meach, M C, Halloran General Hospital; Lieut. W I Glass, M C, Kennedy General Hospital; Capt A L Evans, M C, Lawson General Hospital; Major V Ervin, M C, Letterman General Hospital; Major G F Wollgast, M C, McCloskey General Hospital; Lieut. J M Ferrer Jr, M C, Rey Jones General Hospital; Capt. W H McKeane, M C, Valley Forge General Hospital; and Capt J E Hamilton, M C, Walter Reed General Hospital.

The laboratory studies have been under the supervision of Lieut. R Rustigian, Sn C, and Barbara J Silverman for bacteriology and G Margaret Rourke, B A, Eleanor G Fogarty, B A, and Jane LePetra, B S, for chemistry.

Col. Ralph G DeVoe, M C, U S Army, commanding officer, Halloran General Hospital, and Col Robert M Hardaway, M C, U S Army, commanding officer, Bushnell General Hospital, gave invaluable advice and cooperation in the establishment and maintenance of the penicillin units.

Valuable assistance was given by Drs. A. N. Richards, A. Baird Hastings, A. R. Dochez, Chester Keefer, and Major John D. Stewart, M C, A U S.

At one of the units (Halloran General Hospital) special bacteriologic and chemical laboratory facilities have been set up. At other hospitals an especial liaison has been established with the routine laboratories to allow for preferential treatment of problems in the penicillin ward.

The program as outlined has been concerned with surgical infections and has not included the treatment of sulfonamide resistant gonorrhea. The accumulated data will be reviewed in the following order:

I Penicillin. Methods of administration, dosage and reactions.

II Experience in the treatment of acute pyogenic infections.

III Experience in the treatment of chronically septic compound fractures with observations on the bacteriology of war wounds and the anemia of chronic sepsis.

### I PENICILLIN

*Methods of Administration*—Both the intravenous and the intramuscular routes have been used extensively for intermittent injections. In unskilled hands the incidence of thromboses after intravenous injection is sufficiently great to make the intramuscular route preferable. The deltoid and gluteus muscles have been used most frequently. The intramuscular route has proved practical, and no contraindication to its continued use has been observed.

The constant intravenous method of treatment has been preferred for immediately life endangering infections. Penicillin has been dissolved in 5 per cent dextrose or isotonic solution of sodium chloride for constant drip administration, or injections of concentrated solutions have been made at frequent intervals directly into the tubing or into an adapter valve in the tubing.

Local application of the powdered sodium salt of penicillin is too irritating for general use.<sup>1</sup> Concentrations up to 5,000 units per cubic centimeter have been used occasionally, but the usual preparation has contained 250 units per cubic centimeter. The antibacterial activity of such solutions has been demonstrated in exudates for twenty-four hours after a single local application. More frequent applications may be necessary under particular circumstances, but the single daily application is usually adequate to keep the wound clean and free from pyogenic cocci. Penicillin has been injected through tubes and spigots, has been incorporated into ointments and has been applied as a wet dressing.<sup>2</sup> Both calcium and sodium salts have

1 Clark, A. M., Colebrook, L., Gibson, T. and Thompson, M. L. Penicillin and Propamide in Burns. Elimination of Hemolytic Streptococci and Staphylococci. *Lancet* 1: 695 (May 15) 1943.

2 Florey, M. E. and Florey, H. W. General. Local Action of Penicillin. *Lancet* 1: 387 ( ) 1943.

been used. The nature of the wound is the chief factor in the selection of the method or vehicle for local application.

The inability of investigators<sup>3</sup> to demonstrate penicillin in spinal fluid after intravenous or intramuscular injection has led to a recommendation of intrathecal injection for patients with meningitis. Ventricular fluid has been shown to possess an antibacterial effect following an injection of penicillin into the lumbar space. Spurling<sup>4</sup> has expressed a preference for the injection of penicillin into the lateral ventricles through a burr hole, as more likely to insure better diffusion of the drug from above downward than vice versa. In any event, it is important to make certain that there is no intrathecal block in a case treated through a single site of injection. Enough experience has been accumulated to state that lumbar, cisternal and ventricular routes are all practical.

**Reactions to Penicillin**—Increasing experience leads to the conviction that certain untoward reactions are peculiar to particular batches of the drug and are attributable to toxic impurities rather than to the active penicillin fraction. Such impurities constitute 80 to 90 per cent of the final product and may vary from batch to batch in the hands of a single producer. It is our impression that deeply colored penicillin which foams during preparation or contains a nonfiltrable residue is most apt to give reactions. The yellow pigment is not the active agent.<sup>5</sup>

The reactions associated with particular batches of penicillin and thought to be due to impurities are

- 1 Chills with or without fever after intravenous injection
- 2 Eosinophilia of 20 to 30 per cent
- 3 Burning pain at the site of intramuscular injection
- 4 Headache
- 5 Faintness and flushing of the face
- 6 Unpleasant taste after parenteral injection
- 7 Tingling in testes
- 8 Muscle cramps
- 9 Femoral phlebotrombosis

Most of these reactions were encountered during the developmental period of penicillin therapy and could be prevented by Seitz filtration of the solution before injection. Such precautions are no longer generally necessary, and the various commercial products are satisfactory for use as issued. It should be noted, however, that about half the patients will experience a transient burning discomfort at the site of intramuscular injection during the first forty-eight hours of treatment but not thereafter.

There is an extremely low incidence of untoward reactions attributable to products of penicillin available at present. This product still contains many impurities in addition to penicillin, so that it cannot be concluded that even these reactions are due only to penicillin. The most that can be said are that the following reactions have not been limited to particular batches of the drug:

- 1 Urticaria
  - (a) Without fever
  - (b) With fever to 101 F
  - (c) With fever to 103 F and abdominal cramps

<sup>3</sup> Rammelkamp, C. H., and Keefer, C. S. The Absorption, Excretion and Toxicity of Penicillin Administered by Intrathecal Injection. *Am. J. M. Sc.* 205: 342 (March) 1943; The Absorption, Excretion and Distribution of Penicillin, *J. Clin. Investigation* 22: 425 (May) 1943.  
<sup>4</sup> Spurling, Glenn, Lieut. Col., M. C., A. U. S. Personal communication to the author.  
<sup>5</sup> Reid, R. D. Some Properties of a Bacterial Inhibiting Substance Produced by a Mold, *J. Bact.* 29: 215 (Feb.) 1935.

- 2 Fever in the first five days of therapy
- 3 Transient azotemia.
- 4 Thrombophlebitis at the site of constant intravenous injection

**Urticaria**—The commonest single complication is probably urticaria and occurred in 12, or 57 per cent, of 209 cases. It has occurred during every week of treatment, as early as the first day and as late as the fourth week. It has been reported once as a complication of local therapy alone. The lesions usually develop during treatment but may occur as late as nine days after treatment has been stopped. The wheals are widely distributed over the body, the face and eyelids become swollen, and there may be swelling of the fingers with joint pains in the hands. The process continues for three to five days and is usually benefited by epinephrine or ephedrine. The course is independent of continuance or cessation of treatment. Subsequent courses of penicillin therapy in patients with a history of urticaria during the first treatment period have been uneventful and not associated with recurrent urticaria.

The complications associated with urticaria are fever and abdominal cramps. The fever is present only when the urticaria is severe and does not usually exceed 101 F. Two patients receiving large doses of penicillin (400,000 and 600,000 units daily respectively), subsequently developed urticaria, fever to 103 F and abdominal cramps with frequent formed stools. In two other patients an unexplained fever of 103 F without urticaria has been noted on the eighteenth and twenty-seventh days respectively. The first of these patients had no other symptoms, but the second showed dermatographia, lacrimation, conjunctival injection and sneezing. These symptoms have suggested an analogy to serum sickness, but eosinophilia has not been definite. Tests for cutaneous and ophthalmic sensitivity during and after the reactive phase have been negative. Precipitins for penicillin have been absent in the serum of patients tested during the phase of urticaria. Heterophil agglutinins have been irregularly demonstrated by means of a system adjusted for maximal sensitivity, but such agglutinins have not been significantly and constantly increased.<sup>6</sup> However, chemical assays of penicillin have revealed only trace amounts of nitrogen, and the active drug is not a protein.<sup>7</sup> For practical purposes of clinical management the urticarial reaction may be considered an atypical sensitization phenomenon. It is atypical in the sense that the period of sensitivity is remarkably transient. Therapy may usually be continued through the period of urticaria, and subsequent courses of treatment reveal no evidence of persistent sensitivity.

**Fever Without Urticaria**—In a few patients fever without urticaria has been noted during the first three to five days of treatment. Such fever is most apparent in patients previously afebrile, although it may also occur and cause some concern in patients with febrile infections. In general the temperature chart reflects clinical progress less dramatically than one might expect on the basis of experience with sulfonamides. There is no evidence that penicillin is antipyretic per se.

<sup>6</sup> Serums from patients under treatment examined by Dr. W. H. Goebel, Rockefeller Institute, New York City, and Dr. C. A. Stuart, Brown University, Providence, R. I.  
<sup>7</sup> Abraham, E. P., and Chain, E. Purification and Some Physical and Chemical Properties of Penicillin, with a Note on the Spectrographic Examination of Penicillin Preparations by E. R. Holiday. *Brit. J. Exper. Path.* 23: 103 (June) 1942. Meyer, K. Chaffee, E. Hobby, G. L., Dawson, M. H., Schwenk, E., and Fleischer, G. On Penicillin, *Science* 96: 20 (July 3) 1942.

**Transient Azotemia**—This has been reported during the course of treatment by the Floreys.<sup>2\*</sup> In some of their cases the blood urea nitrogen was moderately elevated during therapy but returned to normal after penicillin was stopped. Albuminuria was not noted. In the present series the nonprotein nitrogen content of the plasma has been followed. Transient elevations of 5 to 10 mg per hundred cubic centimeters have been recorded but the total concentration has rarely exceeded 35 mg per hundred cubic centimeters, the highest recorded value being 48 mg per hundred cubic centimeters.<sup>3</sup> Hyaline casts have been noted occasionally in the urine, but albuminuria has been absent. No clinical significance has been attached to these lesser degrees of azotemia. The observations did suggest that penicillin might have some inhibitory effect on the enzyme urease. Experimentally, penicillin failed to inhibit the urease system of *Proteus mirabilis*.

**Thrombophlebitis**—At the site of constant intravenous injection thrombophlebitis occurs frequently. The phlebitis is noticeable during the second day of injection and may lead to chills and fever if therapy is continued through the same vein. The complication may be avoided by the use of dilute solutions of penicillin and a daily change of the position of the needle. Active phlebitis does not occur at the site of intermittent intravenous injections, and the incidence of thromboses reflects the skill with which venipuncture has been performed. As many as 500 intravenous injections have been given to 1 patient without thrombosis of a single vein.<sup>9</sup> The hazard of pulmonary infarction as a consequence of thrombophlebitis in the lower extremity has led to the recommendation that all intravenous injections be given in arm veins.

**Dosage of Penicillin**—The greatest difficulty attends precise definition of therapeutically effective dosage for penicillin. The limited supply of the drug has encouraged determination of the minimally adequate rather than the maximally tolerated dose, and there is a definite trend to higher dosage as more liberal quantities of the drug become available. Bioassays of penicillin activity have given fairly close agreement, but it is possible to have variations of 25 per cent.<sup>10</sup> There is considerable variation in the stability of prepared solutions, and in certain instances it would appear that such changes were responsible for inadequate therapy. In addition, the susceptibility of bacteria to penicillin is variable not only from group to group but from strain to strain. To date it has been necessary to maintain laboratory controls of the potency of penicillin and bacterial susceptibility to insure uniformly successful results.

In general, the following suggestions in regard to dosage are valid:

**Streptococcal Infections**—The group of streptococci includes resistant and susceptible species. Resistant forms have been encountered most commonly in the viridans group and the thermophilic (capable of growth at 45 C) group of nonhemolytic streptococci (faecalis type). The susceptible species include most of the

beta hemolytic, mesophilic nonhemolytic and some alpha hemolytic, or viridans, streptococci. Sensitive strains are usually extremely susceptible to penicillin. Adequate therapy for susceptible infections has been provided by 90,000 units of penicillin daily given as 15,000 units every four hours intramuscularly.

**Staphylococcal Infections**—As a group the staphylococci require two to four times as much penicillin for inhibition as do susceptible strains of streptococci or pneumococci, but some strains of staphylococci are extremely sensitive. A recognized complication of therapy is the tendency of bacteria, particularly staphylococci, to become resistant, or "fast," to penicillin. Inadequate dosage tends to develop resistant strains. In our experience penicillin fastness has usually developed within the first week of treatment if it is to occur. Resistant strains have been responsible for persistence or recurrence of infection during treatment and for relapses after weeks of apparent cure. Occasional cases will progress to satisfactory healing in spite of the development of penicillin fastness by the infecting strain of staphylococcus. It has been shown that strains made resistant by in vitro passage in the laboratory develop degraded metabolic characteristics and attenuated virulence.<sup>11</sup> The coagulase activity and mannite fermentation of the resistant strains in this series have not been altered, and loss of virulence has not been apparent clinically. On the other hand, incomplete therapy does not lead necessarily to loss of sensitivity. A sensitive strain was recovered from a bone abscess of the femur two months after conclusion of treatment with 10,000,000 units of penicillin for a fulminating hematogenous osteomyelitis.

In summary, the hazard of penicillin fastness dictates intensive and effective initial dosage for all infections. It is particularly necessary to use large initial dosage for staphylococcal infections. For bacteremic infections the constant intravenous treatment is recommended with an initial dose of 25,000 units and 5,000 to 7,500 units every half hour thereafter for a total of 240,000 to 360,000 units daily. As much as 600,000 units daily has been required for such infections. As progress warrants, or as an alternative method for maintenance, a dosage of 25,000 units every three hours has provided 200,000 units daily. The latter dosage is routine for all nonbacteremic staphylococcal infections treated with the penicillin of present potency. It is known that this dosage will vary from one infection to another and from one particular product of penicillin to another.

**Clostridial Infections**—The pathogenic clostridia have been found sensitive to penicillin,<sup>12</sup> but these are

8 Patient of Lieut. J. M. Ferrer Jr. M. C. Percy Jones General Hospital Battle Creek Mich.

9 Patient of Lieut. F. W. Cooper Jr. M. C. Ashford General Hospital West Virginia.

10 Abraham E. P. Chain, E. Fletcher, C. M. Gardner, A. D. Heatley, N. G. Jennings, M. A. and Florey, H. W. Further Observations on Penicillin. *Lancet* 2: 177 (Aug. 16) 1941. Enster, J. W. and Woodruff, H. B. Microbiological Aspects of Penicillin. *I. Methods of Assay*. *J. Bact.* 46: 187 (Aug.) 1943.

11 McKee, C. M. and Hnuck, C. L. Induced Penicillin Resistance in *Pneumococcus* Type III Culture. *Federation Proc.* 3: 100 (March 16) 1943. Induced Resistance to Penicillin of Cultures of *Staphylococci*, *Pneumococci* and *Streptococci*. *Proc. Soc. Exper. Biol. & Med.* 53: 33 (May) 1943. Abraham Chain, Fletcher, Gardner, Heatley, Jennings and Florey.<sup>10</sup>

12 Chain, E., Florey, H. W., Gardner, A. D., Jennings, M. A., Orr-Ewing, J. and Sanders, A. G. Penicillin as a Chemotherapeutic Agent. *Lancet* 2: 226 (Aug. 24) 1940. Dawson, M. H., Hobbs, G. L., Meyer, K. and Chaffee, E. Penicillin as a Chemotherapeutic Agent. *J. Clin. Investigation* 20: 434 (July) 1941. Florey, H. W. and Jennings, M. A. Some Biological Properties of Highly Purified Penicillin. *Brit. J. Exper. Path.* 23: 120 (June) 1942. Gardner, A. D. Morphological Effects of Penicillin on Bacteria. *Nature* London 146: 837 (Dec. 28) 1940. Hae, L. R. and Hubert, A. C. Penicillin in Treatment of Experimental Clostridium Welchii Infection. *Proc. Soc. Exper. Biol. & Med.* 53: 61 (May) 1943. Hobbs, G. L., Meyer, K. and Chaffee, E. Activity of Penicillin in Vitro. *ibid.* 50: 277 (June) 1942. McIntosh, J. and Selbie, F. R. Zinc Peroxide, Proflavine and Penicillin in Experimental *C. Welchii* Infections. *Lancet* 2: 750 (Dec. 26) 1942. Robinson, H. J. Toxicity and Efficacy of Penicillin. *J. Pharmacol. & Exper. Therap.* 77: 70 (Jan.) 1943.

laboratory and animal observations Dosage for human beings is uncertain because of lack of experience with the therapy of gas gangrene No cases of gas gangrene have been reported in this series The proteolytic clostridia recovered from war wounds require four to five times as much penicillin as do staphylococci, whereas organisms of the tetanus-tetanomorphum group are similar to streptococci in their sensitivity These bacteria have been responsible for anaerobic cellulitis or putrefactive locally necrotizing infections and have been isolated in frequent association with *Proteus* bacilli of various types Wound infection with these organisms in abundance is indicative of devitalized

has been given it is difficult to evaluate the observed relative sensitivity of the particular strain in terms of fastness

## II PENICILLIN THERAPY OF ACUTE INFECTIONS

The results in the treatment of acute infections are in keeping with the findings of Keefer and his associates<sup>13</sup> An analysis of reported cases is presented in table 1

*Bacteremias*—Six of 9 patients with staphylococemia recovered All the infections were severe The three deaths included 2 instances of endocarditis and

TABLE 1—Analysis of Reported Cases

	Num ber	Im proved	Died	No Effect
<i>Bacteremias</i>				
Staphylococcus	0	6	1	0
Beta hemolytic streptococcus	4	1	1	0
Pneumococcus, nonhemolytic streptococcus	1	0	1	0
Staphylococcus, nonhemolytic streptococcus	1	1	0	0
<i>Proteus</i> bacillus	1	0	1	0
Meningococcus	1	1	0	0
Coli, aerogenes, nonhemolytic streptococcus	1	0	1	0
<i>Shimonella</i>	1	1	0	0
	19	12	7	0
<i>Nonbacterial staphylococcus infections</i>				
Abscess	12	11	0	1
Burns	2	1	1	0
Conjunctivitis	1	3	0	0
Empyema	2	2	0	0
Mastoiditis	1	1	0	2
Meningitis	2	2	0	0
Osteomyelitis	12	11	0	1
Osteomyelitis of skull	4	4	0	0
Parotitis	2	2	0	0
Skin and subcutaneous tissue	12	11	0	1
Urinary tract	4	4	0	0
Wound infections	21	17	0	4
	79	69	1	9
<i>Nonbacterial hemolytic streptococcus infections</i>				
Cellulitis	5	5	0	0
Empyema	1	0	1	0
Erysipelas	1	1	0	0
Mastoiditis	2	2	0	0
Osteomyelitis	1	1	0	0
Pinusitis	1	1	0	0
	11	10	1	0
<i>Staphylococci and beta hemolytic streptococcus infections</i>				
Burns	2	1	1	0
Mastoiditis	4	4	0	0
Wound infections	2	1	0	1
	8	6	1	1
<i>Anaerobic cellulitis</i>				
<i>Clostridium welchii</i>	2	2	0	0
	2	2	0	0
<i>Lung abscess</i>				
Putrid	2	0	0	2
Pyogenic	2	2	0	0
	4	2	0	2
<i>Intraperitoneal infections</i>				
Appendical	3	1	1	1
Subphrenic abscess	2	1	0	1
Peritonitis, unknown cause	1	0	0	1
	6	2	1	3
<i>Infections with unproved or unknown etiology</i>				
Pyoderma	1	1	0	0
Cellulitis of leg	1	1	0	0
Paronychia	1	1	0	0
Osteomyelitis of tarsus	2	2	0	0
Osteomyelitis of mandible	1	1	0	0
Atypical pneumonia	1	0	1	0
Meningitis	3	2	1	0
Postoperative pneumonitis	1	1	0	0
Perinephric abscess	1	1	0	0
Scarlet fever	1	0	0	1
Arthritis, knee	1	1	0	0
Rheumatic fever	1	0	0	1
Submental abscess	1	1	0	0
Iridocyclitis	1	0	0	1
Choroiditis	1	0	0	1
Multiple sinuses	1	0	0	1
	19	12	2	5
<i>Skeletal compound fractures</i>				
Staphylococcus	30	26	0	4
Staphylococci arthritis	2	2	0	0
Staphylococcus and beta hemolytic streptococcus	13	12	0	1
Putrid	2	2	0	0
	47	42	0	5
<i>Miscellaneous infections</i>				
Actinomycosis	4	4	0	0
Malaria ( <i>Plasmodium vivax</i> )	4	0	0	4
Chronic ulcerative colitis	2	0	0	2
Coccidiosis	1	0	0	1
Pneumococci meningitis	1	1	0	0
Pylonephritis (nonhemolytic streptococcus)	1	1	0	0
Conjunctivitis (Koch Weeks)	1	1	0	0
	14	7	0	7
	209	164	13	32

tissue or bone fragments Systemic penicillin therapy in dosages of 200,000 units daily has controlled the associated anaerobic cellulitis but has not arrested supuration as dramatically as in the cases of pyogenic coccic infection Local therapy is almost a necessary supplement to systemic therapy, local therapy alone has not been as effective as combined therapy Increasing the systemic dosage up to 400,000 units daily has not seemed to be more effective Control of the anaerobic infection usually follows wound revision and sequestrectomy The subsidence of inflammation is entirely clinical, for the clostridia persist in the wound throughout the period of healing in spite of intensive local therapy

The problem of penicillin fastness among clostridial species has not been investigated It is not uncommon to isolate clostridia for the first time from a wound by culture of a sequestrum removed at operation As such cultures are made after a period of treatment

a secondary staphylococcal infection of an extensive atypical pneumonitis It is of interest that in both instances of endocarditis the strains recovered before treatment were subsequently shown to be resistant to penicillin In other words, penicillin fastness was inherent and not induced in the two endocarditis strains

The 4 patients with hemolytic streptococcus bacteremia had failed to respond to sulfadiazine The one death occurred during the first forty-eight hours of treatment from major intracranial thromboses secondary to frontal sinusitis

The death recorded in consequence of a bacteremia due to pneumococci and nonhemolytic streptococci represents an instance of treatment of a moribund patient with pneumonia

13 Keefer C S, Blake F G, Marshall E K, Jr, Lockwood J S, and Wood, W B, Jr Penicillin in the Treatment of Infections A Report of 500 Cases, J A M A 122 1217 (Aug 23) 1943

The mixed staphylococcus and nonhemolytic streptococcus bacteremia arose from an empyema. Rib resection was performed at the time penicillin therapy was started.

The recovery recorded for meningococcemia represents a complicated case. Sulfadiazine and meningococcal antiserum were given for acute meningitis and a retrobulbar abscess. The response was slow but progressive until the tenth day at which time serum sickness developed with an exacerbation of the infection and the appearance of multiple metastatic abscesses. The meningitis did not recur, and the patient responded to intravenous penicillin therapy without intrathecal supplement.

A recovery is listed under the heading of salmonella bacteremia. The focus of infection was a large ischio-rectal and retroperitoneal abscess containing beta hemolytic streptococci in quantity. It is likely that penicillin controlled the streptococcal component of the infection, whereas the clearance of the salmonella infection was merely coincidental.

A patient with *Proteus bacillus* bacteremia quite understandably showed no improvement and died. Penicillin is not effective against this organism.

Another patient succumbed during penicillin therapy for a mixed bacteremia due to *Escherichia coli*. Aerobacter aerogenes and nonhemolytic streptococci. A septic compound fracture of the pelvis and a pelvic abscess were associated with septic thrombophlebitis of the inferior cava and its tributaries.

**Staphylococcal Infections Without Bacteremia**—Sixty-nine, or 87 per cent, of 79 patients showed a favorable response to penicillin therapy. One patient with third degree burns died. The cause of death was not apparent at autopsy, but the clinical record is one of persistent hypotension following curettage of the wounds without blood transfusion. The two failures recorded under mastoiditis were instances of the development of penicillin resistance by the etiologic strains.

Osteomyelitis due to staphylococci deserves special comment. Eleven of twelve infections were reported improved as judged by sterilization of pus and complete or partial healing of sinuses. Three patients treated at Halloran General Hospital had osteomyelitis of the femur. A patient with Brodie's abscess and an abscess of the popliteal space was given systemic penicillin after a pure culture of staphylococcus was obtained at the site of spontaneous rupture of the soft parts abscess. The inflammation subsided rapidly, and on the fourth day of treatment the femur was saucerized and the wound closed around a rubber tissue drain. All subsequent cultures were sterile, the wick was removed on the fifth day and the wound healed and has remained healed for two months. A similar experience was recorded in the treatment of a cortical lesion of the shaft with subperiosteal abscess formation. A third patient was treated with penicillin through a period of acute osteomyelitis of the entire shaft of the femur. Symptomatic recovery with demineralization and new bone formation occurred. The patient was kept under observation and three months later developed an extensive medullary abscess. The entire femur was saucerized and the wound was closed without drainage. Positive cultures were obtained from the pus recovered at operation, but a sterile culture was recovered from a small amount of hematoma evacuated on the tenth

postoperative day. At the present time it seems likely that the penicillin therapy of chronic staphylococcal osteomyelitis of the long bones may require surgical intervention with incomplete or primary closure of the wound. Two cases of osteomyelitis of the tarsus in which there was response to penicillin therapy without suppuration are recorded under "infections of unknown etiology." In 1 of the cases already discussed there were spontaneous subsidence and healing of a focus of osteomyelitis in the sacrum. Similar spontaneous and rapid healing of osteomyelitis of the vertebra has been observed with penicillin in cases not included in this series. There is reason to believe that penicillin may effect subsidence of osteomyelitis of flat bones without surgical intervention in the absence of sequestrums.

**Hemolytic Streptococcus Infections Without Bacteremia**—Satisfactory bacteriologic sterilization was achieved in every case. One death resulted from pulmonary edema as a complication of the treatment of empyema.

**Mixed Staphylococcus and Hemolytic Streptococcus Infections**—One patient with extensive third degree burns died with anuria from a cause not related to penicillin therapy. Six of 8 cases responded favorably and 1 wound infection was not influenced.

**Anaerobic Cellulitis**—Two patients with low grade infections of the subcutaneous tissues due to *Clostridium perfringens* have responded favorably to penicillin therapy.

**Lung Abscess**—Penicillin has been without effect on 2 patients with putrid lung abscess, two pyogenic streptococcus lung abscesses were healed.

**Intraoperative Infections**—Infections arising as complications of appendicitis have not been responsive to treatment, although 1 patient showed improvement coincident with treatment. The series is too small for evaluation.

The response of patients with subphrenic abscess varies with the susceptibility of the causative bacteria.

**Miscellaneous Infections**—Malaria due to *Plasmodium vivax* is not affected by penicillin. In addition to the 4 recorded failures, 2 other patients have developed recurrent malaria under treatment. Four patients with actinomycosis were improved by treatment, but further follow-up is necessary. Chronic ulcerative colitis failed to respond in 2 instances.

### III THERAPY OF CHRONIC INFECTION IN GUNSHOT FRACTURES

The soldier with a chronically infected gunshot fracture presents a complex clinical problem. The degree of nutritional depletion is variable and may be so extreme as to take precedence over all other factors. The bacterial infection is usually polymicrobial and may be latent or active. The anatomic abnormality is irregular, and a wide variety of surgical procedures may be adapted to the proper solution of the problem. Penicillin therapy has a definite place in the management of these cases. Our observations will be recorded in relation to the problems involved.

- 1 Nutritional depletion.
- 2 Bacteriologic characteristics of the infection.
- 3 Selection of cases and surgical management.
- 4 Results of treatment.



**Nutritional Depletion**—The clinical picture of the patient with chronic infection is well known. There is weight loss, diminished strength and muscle mass, anorexia and anemia. Clinical experience with a large group of comparable cases always emphasizes similarities frequently overlooked in the course of contact with individual cases. It seems pertinent to record the observations during this period of treatment with penicillin.

The weight loss has been considerable, varying from 5 to 30 Kg. A loss of 10 Kg is clinically obvious. Muscle atrophy and loss of strength precede weight loss and restoration of muscle bulk and strength appear prior to significant weight gain during convalescence.

The distribution of extracellular body fluids has been examined by the sodium thiocyanate<sup>14</sup> and Evans blue

great for the standard of the patient's observed weight and significantly larger than the standard for the weight prior to injury. During convalescence the interstitial fluid volume slowly decreases without apparent diuresis. The sedimentation rate has been correlated more closely with improvement than any other laboratory determination. Progressive weight gain is rarely apparent before the sixth to the eighth week of convalescence.

Significant fluctuations in the concentration of serum protein and hemoglobin have been recorded. These have been correlated with changes in blood volume and are independent of penicillin therapy. During periods of hemoconcentration the urine volume may equal or exceed the fluid intake. Unless the blood volume is known, a single observation of the concentration of the serum protein or hemoglobin may be misleading. Reductions of 1,500 to 2,000 cc in blood volume have been recorded. This degree of reduced blood volume is dangerous if it exists at the time of operation because minor blood loss may produce an ineffective blood volume and shock.

Charts 1 to 5 demonstrate also that there is a deficit in the total quantity of circulating hemoglobin and that there is a normal or nearly normal quantity of plasma protein present. Fractionation of the serum proteins into albumin and globulin by the ammonium sulfate method in 30 cases has failed to show any significant variation from accepted normal values. The plasma fibrinogens have been constantly elevated. There have been no abnormalities of the blood electrolytes. It appears that the major deficiency in these chronically infected battle casualties is hemoglobin. This deficiency is frequently masked by hemoconcentration and normal or near normal quantities of hemoglobin in a given unit of blood. Accurate values may be obtained only by calculation of the total circulating hemoglobin when the blood volume and concentration are both known. The practical difficulties of routine blood volume determinations preclude routine use of the method. From a clinical point of view it must be assumed that every patient with chronic infection is anemic.

Liver function has not been specifically investigated. Prothrombin times have invariably been normal. With normal serum proteins and increased fibrinogen values it has been assumed that liver function is satisfactory.

Penicillin therapy does not appear to have any specific effect on the metabolic balance of nitrogen, calcium or phosphorus (table 2).

In this series of patients it has been found that the urinary nitrogen tends to be high (15 to 20 Gm daily) without increased values for urinary potassium. Positive nitrogen balance is attained by any method that provides an intake of 130 Gm of protein or more per day. One of the important consequences of penicillin therapy is the improved appetite. Intakes of 150 to 200 Gm of protein are relatively easily achieved during treatment.

Observations of nitrogen balance have been made for periods of two to six weeks on 15 patients. Two standard diets have been given to provide 2,500 calories for smaller patients and 3,000 calories for larger patients. The general composition of the diet has been 60 per cent carbohydrate, 20 to 25 per cent protein and 15 to 20 per cent fat. With the exception of 2 patients with acute infections, this diet produced a positive nitrogen balance independently of penicillin.

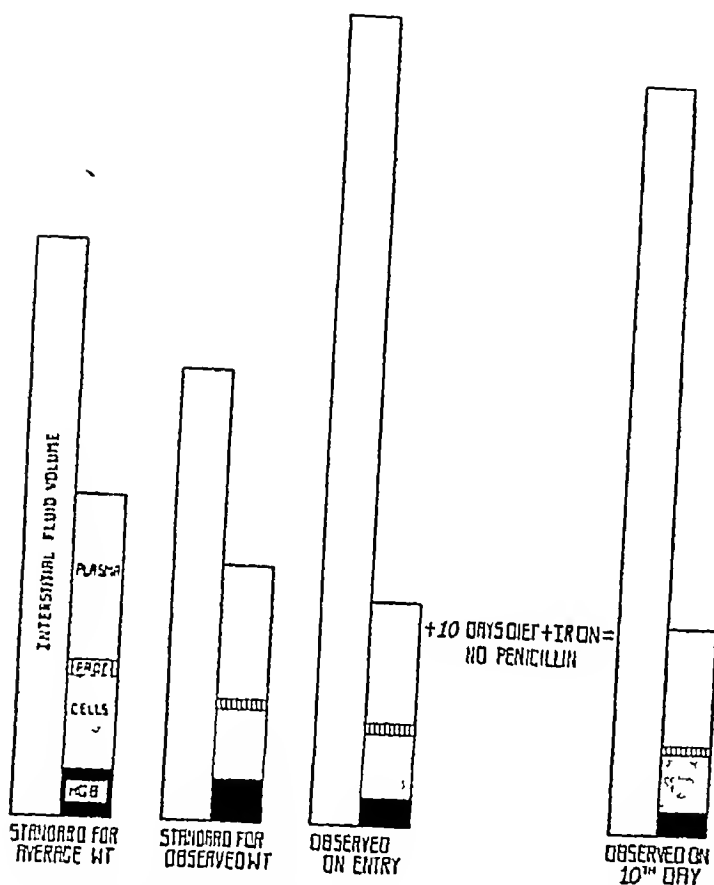


Chart 1—The interstitial fluid volume was larger than the standard for the observed weight and for the actual weight. The blood volume was less than the standard. The deficit of hemoglobin was greater than indicated by the concentration of hemoglobin as determined in grams per hundred cubic centimeters. This patient was confined to bed with elevation of his infected leg. An abundant diet with added iron was provided. No penicillin, plasma or whole blood was given, and the patient served as a control for the effects of the usual treatment methods. After ten days of known positive nitrogen balance there was a further reduction in blood volume and total grams of hemoglobin.

	Standard		Observed	
	Average Weight	Observed Weight	On Entry	10th Day
Body weight (kg.)	70	55.1	55.1	54.8
Interstitial fluid volume (cc.)	11,200	8,800	15,800	14,700
Blood volume (cc.)	3,300	5,000	4,400	4,100
Grams hemoglobin per 100 cc.	15	15	13.4	12
Total grams hemoglobin	915	825	515	490
Grams protein per 100 cc.	6.8	6.8	7.6	7.5
Total grams protein	210	190	200	180

dye<sup>15</sup> methods. These findings are presented in charts 1 to 5. On admission to the ward the patients have had an interstitial fluid volume 4 to 7 liters too

<sup>14</sup> Crandall, L. A., and Anderson, M. A. Estimation of the State of Hydration of the Body by the Amount of Water Available for the Solution of Sodium Thiocyanate, *Am J Digest Dis & Nutrition* 1: 126 (April) 1934.

<sup>15</sup> Gregersen, M. I., Gibson, J. J., and Stead, E. A. Plasma Volume Determination with Dyes. Errors in Colorimetry, the Use of the Blue Dye T 1824, *Am J Physiol* 113: 54 (Sept) 1935.

therapy On the other hand, positivity of nitrogen balance was not associated with restoration of hemoglobin values unless penicillin was given The extraordinary virtue of penicillin in this regard is shown in charts 1 and 2 Further studies relating positive nitrogen balance to the rate of hemoglobin formation and hemopoietic activity are clearly indicated

Patients subjected to operation without supportive intravenous supplement have been studied carefully after operation The hematocrit, hemoglobin and plasma protein values are relatively unchanged, but the pulse rate is accelerated during the first forty-eight hours On the third or fourth postoperative day there is a decrease in the hematocrit and hemoglobin values with an unchanged or increased plasma protein concentration These changes are illustrated in charts 3 and 4 The blood volume is greatly reduced and there is a disproportionate reduction in the total quantity of hemoglobin as compared to the total quantity of plasma protein It has not been possible to determine whether this is due to preferential utilization of hemoglobin, less rapid synthesis of new hemoglobin or faulty red cell regeneration The implications for clinical therapy are clearly for whole blood instead of plasma The quantitative aspects of replacement therapy to prevent these changes are shown in chart 5

We have briefly reviewed the results of an extensive investigation of the nutritional status of battle casualties with chronic sepsis as they arrive in this country and after treatment with plasma and sulfonamides The most apparently deficient substance is hemoglobin, and the interstitial fluid volume is large Penicillin therapy does not alter nitrogen balance *per se* but does favor a positive balance in consequence of an improved appetite with controlled infection Effective restoration of hemoglobin does not result from positive nitrogen balance unless penicillin is given to control infection However, the rate of metabolic regeneration fails to keep pace with the clinical program made possible by the rapid control of the infection Frequent transfusions of 500 to 1,000 cc of whole blood are necessary during the preoperative and postoperative periods A judicious combination of whole blood and plasma in 1,000 cc quantities on the day before operation, the day of operation and the day after operation is necessary to maintain blood volume and positive nitrogen balance Similar quantities of whole blood are necessary once or twice a week until hemoglobin values are restored and maintained at a level of 15 to 16 Gm per hundred cubic centimeters It should be remembered constantly that the dietary intake alone may fail to meet the reparative demands of the penicillin program

#### Bacteriologic Characteristics of the Infection—

Forty-six cases of septic gunshot fracture have been the subject of extensive aerobic and anaerobic bacteriologic study The majority of the wounds have improved to be a bacteriologic garden, but it has been possible to define four main types of infection These are listed according to incidence

- (a) Putrid
- (b) Staphylococcus
- (c) Hemolytic streptococcus
- (d) Pseudomonas (pyocyanus)

**Putrid Wound Infection**—This produces dirty malodorous wounds The etiologic flora is mixed and there may be some synergistic relationship on the part

of the involved bacteria Functionally the infection is proteolytic and attacks dead tissue, devitalized bone fragments, ischemic or avascular muscle and blood clot In a sense these bacteria are wound scavengers of potential pathogenicity in wounds with extensive tissue destruction or ischemia from closure under tension The attribute of proteolysis has clinical and bacteriologic significance The breakdown of an organic protein matrix leads to the foul odor and the release of organically bound sulfur Hydrogen sulfide is formed and, in the presence of iron, black iron sulfide is produced Clinically there is frequently a distinct odor of hydrogen sulfide, and hemoglobin is blackened In the laboratory, diagnosis depends on the digestion

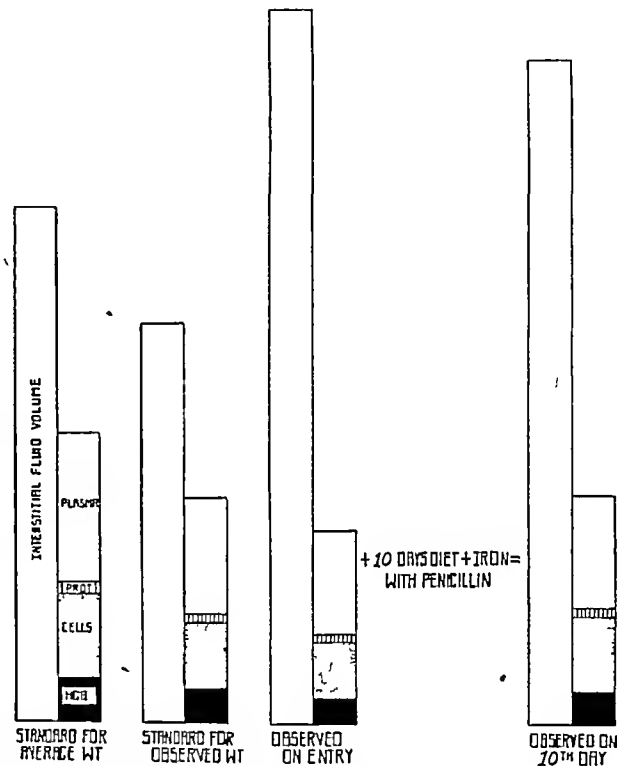


Chart 2—This chart is to be compared with chart 1 Systemic penicillin therapy has supplemented treatment of a similar infection An abundant diet with added iron was given but there were no blood or plasma transfusions The positivity of nitrogen balance was comparable to that recorded in chart 1 Attention is directed to the initially reduced blood volume and total hemoglobin with restoration of normal values during the period of treatment The increased interstitial fluid volume was not altered significantly

	Standard		Observed	
	Average Weight	Observed Weight	On Entry	10th Day
Body weight (kg.)	75	58.3	58.3	58.3
Interstitial fluid volume (cc)	12,000	9,500	10,000	15,400
Blood volume (cc.)	6750	5250	4000	4000
Grams hemoglobin per 100 cc	15	15	13.2	14.5
Total grams hemoglobin	1010	790	600	765
Grams protein per 100 cc	6.8	6.5	6.7	7.5
Total grams protein	250	200	175	210

of meat particles or casein and the detection of sulfur released from sulfur containing amino acids

The mixed flora includes proteolytic clostridia, microaerophilic and anaerobic nonhemolytic streptococci and Proteus

The clostridia are predominantly of the sporogenes, bifementans and tetanomorphum groups (the fecal anaerobes of World War I) In vitro studies have shown the sporogenes and bifementans clostridia to be relatively resistant to penicillin, but they are inhib-

ited by four to five times the effective dose for staphylococci. The tetanomorphum clostridia are as sensitive as the hemolytic streptococci. All these organisms are difficult to remove completely from a wound. Spore forms are as sensitive as the vegetative forms of any given species.

The nonhemolytic streptococci are isolated most easily by anaerobic culture. The thermophilic and heat resistant strains of the faecalis group are generally insensitive to penicillin. The mesophilic and heat sensitive strains are as susceptible as hemolytic streptococci.

The Proteus group of bacteria has shown a preponderance of mirabilis and morganii strains. In 17 of 18 instances of Proteus infection the bacteria have been present in association with proteolytic clostridia. Proteus is not sensitive to penicillin.

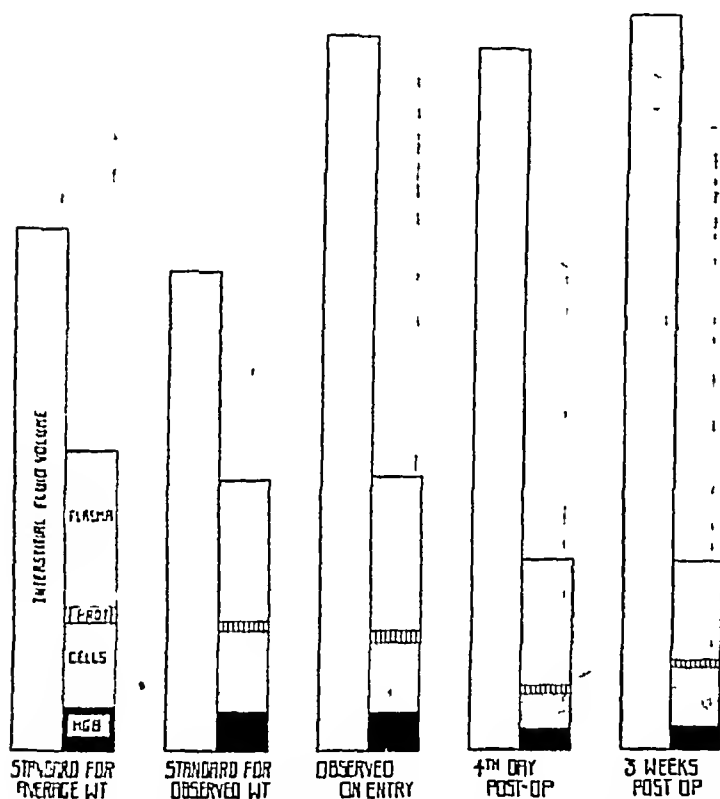


Chart 3—This patient entered with normal blood values and an increased interstitial fluid volume. Penicillin was given to control active infection without blood or plasma. On the fourth day after operative reduction of fractured metatarsals with sequestrectomy under a tourniquet, the studies were repeated. The hemoglobin concentration fell to 12.8 Gm per hundred cubic centimeters, the plasma protein rose to 7.4 Gm per hundred cubic centimeters in consequence of hemoconcentration and a greater decrease in hemoglobin. It is significant that this hemoconcentration was accomplished without reduction of an excessive interstitial fluid volume. The nitrogen balance was negative throughout this period. The values recorded at three weeks after operation emphasize the slow rate of metabolic regeneration in the absence of supportive transfusions with whole blood.

	Standard		Observed		
	Aver age Weight	Observed Weight	On Entry	4th Day Post operatively	3 Weeks Post operatively
Body weight (kg.)	61	57.6	57.6	57.9	59
Interstitial fluid volume (cc.)	10,000	9,200	13,800	13,600	14,300
Blood volume (cc.)	2,750	5,200	5,300	4,700	3,650
Grams hemoglobin per 100 cc	15	15	14.5	12.8	13.2
Total grams hemoglobin	860	780	770	420	480
Grams protein per 100 cc	6.8	6.8	6.9	7.4	7.4
Total grams protein	220	195	220	165	155

The presence of proteolytic putrid infection was demonstrated in 34, or 74 per cent, of 46 cases (table 3). Bacteriologic demonstration of proteolysis has been more helpful than species identification in the clinical management of putrid wound infection.

**Staphylococcal Infection**—This was the second most prevalent complication. Coagulase positive staphylococci were present in 30, or 65 per cent, of 46 cases.

**Beta Hemolytic Streptococcus Infection**—These were isolated from 15, or 33 per cent, of 46 patients. All except 1 of these patients had received prophylactic sulfonamide therapy. Nine received local and systemic chemotherapy, 4 only systemic, and 1 only local. The serologic groups of these strains is shown in table 4. No strain was completely resistant to penicillin therapy, but in 3 cases the strains persisted in diminished numbers in the wound until sequestrectomy was performed. There was no instance of a pure hemolytic streptococcus infection.

**Pyocyanus**—This organism was recovered in 12, or 26 per cent, of the 46 cases. Never the only etiologic organism, it frequently became predominant in the treated wounds. The abundant and intensely bluish green pus of these late wounds is almost a feature of penicillin therapy and has some diagnostic value. When the dressing is green on the surface and brown in the depths of the wound it can be assumed that anaerobic conditions were produced in consequence of improper packing. Pyocyanus seems to thrive in the wound, under treatment with penicillin. Its presence has not interfered with successful skin grafting or secondary closure of extensive defects.

The foregoing patterns of infection exist in combination (table 5). The response to penicillin therapy may be predicted fairly accurately in accordance with the susceptibility of the various infecting organisms, as shown in table 6. There has been no opportunity to conduct significant observations on the organisms of gas gangrene.

Staphylococci and beta hemolytic streptococcus infections are controlled satisfactorily with few exceptions. When these bacteria are predominant, penicillin therapy induces a prompt subsidence of cellulitis and inflammatory edema, a diminution in the quantity of pus and a mucoid character of the exudate. This "penicillin effect" correlates with the disappearance of the bacteria on smear and culture of the pus. Cultures of sequestrums removed during treatment are often negative for streptococci but positive for staphylococci. Seventy per cent of the total of 46 wounds harbored bacteria of one or both of these susceptible species.

Pyocyanus has a high nuisance value and may retard wound healing without causing any real concern.

The paramount problem in the penicillin therapy of septic gunshot fractures is putrid wound infection. It has been impossible to remove these organisms completely from wounds. There is a patent discrepancy between in vitro and in vivo results in many cases. A combination of systemic and local therapy will abolish fever and initiate clinical improvement in patients with pure putrid infections. In such instances suppuration continues until sequestrectomy is performed. The association of putrid wound infection with retained fragments of devitalized bone or foreign bodies is constant. After surgical trauma the infection flares up temporarily as the bacteria gain a foothold in the damaged tissue and blood clot of the wound. Attempts at partial or complete wound closure invite anaerobic cellulitis. Operative sequestrectomy should be per-

formed with minimal trauma, and no exposed cortical bone should be left in the wound. Local therapy should be continued until the wound is healed to prevent secondary staphylococcal infection. The pus of such secondary infection provides an acceptable medium for the growth of proteolytic bacteria. Penicillin therapy must be supplemented with meticulous local care of the wound when putrid infection is present.

**Gram Negative Bacilli**—Gram negative bacilli of the colon, paracolon, *Aerobacter* and para-*Aerobacter* groups have been inconstant and transient contaminants of the wound. They rarely persist for more than a week in a properly managed wound. The air of the dressing room has been found to be a source of such contamination. These bacteria have been below the level of clinical significance.

**Selection of Cases and Surgical Management**—It is necessary to have a definite program for the primary selection and subsequent management of all surgical patients. The presence of infection presents no diagnostic problem, but it has been recognized that infection may be latent or active. Activity of infection has been evaluated in terms of fever, cellulitis or gross suppuration.

The presence of sequestrums or retained foreign bodies is almost universal in these patients. Metallic missile fragments are not a frequent source of chronic suppuration. Bits of clothing, particles of concrete from land mines and other debris have been a fairly constant source of suppuration persistent during treatment. Sequestrums have been sterilized of streptococci but continued to harbor staphylococci, clostridia, *Proteus* and *Pseudomonas* in spite of local therapy. Sequestrectomy and the removal of foreign bodies are an essential part of an effective penicillin program.

Septic arthritis, uncomplicated by foreign bodies in the joint, responds dramatically. Local therapy is an effective supplement in the management of this complication. In some instances the plan of repeated aspiration and injection of penicillin has been followed. In other cases it seemed preferable to establish surgical drainage without actually placing drains in the joint cavity. Sequestrums or foreign bodies in the joint have required removal.

These observations have established operative procedures as part of the program and made it necessary to define a schedule of penicillin therapy in relation to operative intervention. The patients have been divided into four groups:

- Group 1 Latent infection and no nutritional depletion.
- Group 2 Latent infection with nutritional depletion.
- Group 3 Active infection with no nutritional depletion.
- Group 4 Active infection with nutritional depletion.

Nutritional depletion is estimated in terms of weight loss, general appearance of the patient and anemia.

Patients in group 1 with latent infection and no nutritional depletion receive no preliminary therapy. Penicillin is reserved for those cases which present postoperative exacerbations of infection. In a few patients with staphylococcal or mixed staphylococcal and hemolytic streptococcus infection penicillin has been used as a prophylactic measure to permit bone graftings or platings with primary closure. These cases have been carefully selected, and the results warrant cautious expansion of such practice.

Patients in group 2 with latent infection and nutritional depletion profit by a period of supervised diet and repeated blood transfusions. The decision to use or withhold penicillin has been variable in accordance with clinical opinion and the predominant bacterial pathogen in the wound.

Patients in group 3 with active infection and no nutritional depletion usually represent instances of acute infection. As such, they are candidates for immediate therapy.

Patients in group 4 with active infection and severe nutritional depletion comprise the majority of patients under treatment. By and large, replacement therapy with diet, iron and whole blood is more effective when penicillin is used to control the infection. The timing of operation depends on the efficacy of the supportive program. Three to five days of penicillin and trans-

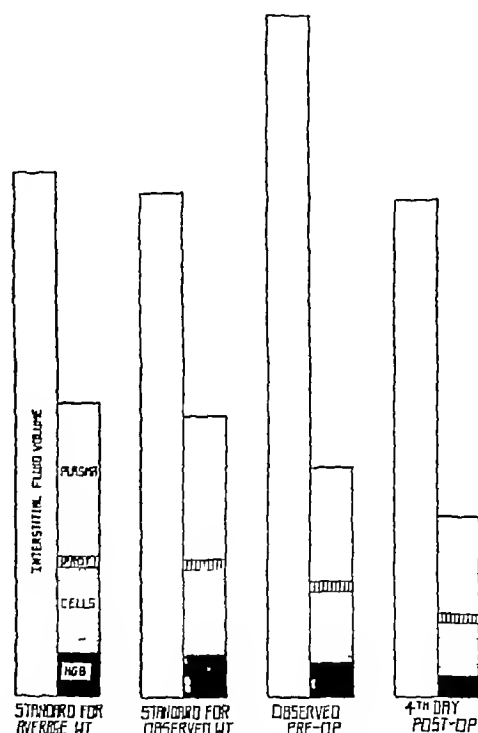


Chart 4—This chart is to be compared with chart 3. The patient received penicillin without supportive transfusions. A compound fracture was reduced and plated. The initial concentration of hemoglobin was nearly normal. The blood volume was reduced. After operation there was a further diminution in blood volume with a definite decrease in hemoglobin. The significant feature of the study was the observation that a loss of 4300 cc from the interstitial fluid volume was recorded coincidentally. It is argued that an available interstitial fluid may buffer the reduction of blood volume without preventing critical deficit in the hemoglobin fraction.

	Standard		Observed	
	Average Weight	Observed Weight	On Entry	4th Day Post-operatively
Body weight (Kg)	77	73.8	73.8	71.7
Interstitial fluid volume (cc)	1100	1100	1090	1100
Blood volume (cc)	600	600	600	420
Grams hemoglobin per 100 cc	15	15	11.5	11.7
Total grams hemoglobin	1000	900	810	500
Grams protein per 100 cc	6.8	6.8	8.0	7.5
Total grams protein	400	410	220	160

fusion therapy is often sufficient to prepare the patient for the indicated operation. For a few patients a week to ten days of preparation has seemed valuable.

Postoperatively it is important to maintain nitrogen balance. This can be done by supplying 130 Gm of protein daily. In most cases intravenous therapy is

necessary to maintain this intake on the day of operation and the first postoperative day Plasma supplies 7 Gm of protein per hundred cubic centimeters, whereas whole blood supplies more nearly 18 Gm per hundred cubic centimeters It can be seen that this protein requirement is met by 2 liters of plasma, 750 cc of whole blood or a mixture of 500 cc of whole blood and 500 cc of plasma The greater need for hemoglobin has been emphasized, and there is an increasing preference for whole blood Transfusion therapy is continued during the phase of convalescence to maintain blood volume, hemoglobin and red cell values

Patients with closed wounds and an uneventful convalescence have received penicillin systemically for eight to ten days The management of the open wound has been variable Removal of the pack in the first five days leads to wound hemorrhage, putrid wound infection of the blood clot and contamination with air

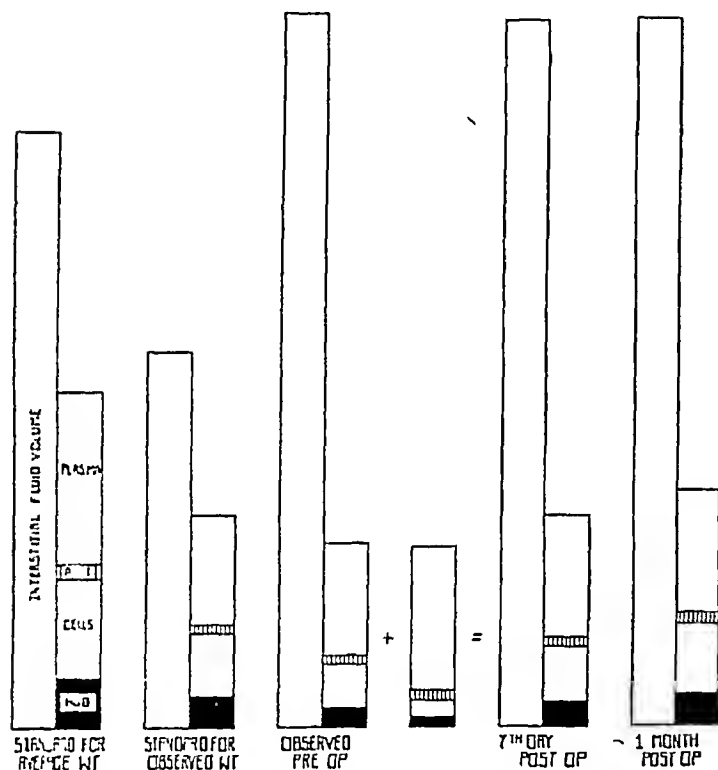


Chart 5—This chart should be compared with charts 3 and 4. It is designed to show the measure of benefit from 1,500 cc of whole blood and 2,500 cc of plasma, a total of 4,000 cc given over a three day period in relation to sequestrectomy. The blood volume was increased to a standard normal value, but 1,500 cc of whole blood did not raise the total hemoglobin value to a normal level. The total deficit would have been met more effectively by the use of a total of 2,500 cc of whole blood than by the mixture of blood and plasma. The interstitial fluid volume remained unchanged throughout this period. The increase in blood volume one month after operation is due entirely to an increase in cells with an unchanged plasma volume, the hematocrit has returned to normal.

	Standard		Observed			
	Average Weight	Observed Weight	On Entry	Given as Transfusions	7th Day Post operatively	1 Month Post operatively
Body weight (kg.)	82	52.1	51.1	4,000 cc	52	
Interstitial fluid volume (cc)	13,100	8,300	10,800		15,700	15,800
Blood volume (cc)	7,400	4,700	4,100		4,700	5,300
Grams hemoglobin per 100 cc	13	15	11		12.2	13.8
Total grams hemoglobin	1,100	700	450	225	575	730
Grams protein per 100 cc	0.8	0.8	7.2		6.0	7.23
Total grams protein	280	170	190	220	190	215

borne gram negative bacilli. Immediate irrigation of the operative wound with penicillin introduced through irrigating tubes may prolong the period of postoperative bleeding. At the present time systemic penicillin therapy

is continued for five to seven days. The wound is then dressed and gently cleansed with hydrogen peroxide to remove blood clot and devitalized tissue fragments. Gauze is saturated with salt solution containing 250 units of penicillin per cubic centimeter and gently placed in the wound under a seal of gauze impregnated with ointment. Systemic penicillin is usually discontinued at this time if subsequent daily dressings are feasible. Some form of therapy must be continued until all bare bone is covered with healthy granulation tissue. Local therapy is preferable whenever practical because it is more economical than systemic therapy. A high local concentration is particularly useful to reduce the intensity of infection with proteolytic clostridia.

**Results of Treatment**—Table 7 records the results of penicillin therapy in 45 cases of septic compound fractures. Forty, or 88 per cent, showed improvement in consequence of treatment. Sequestrectomy was performed in 34 of the 40 "improved" cases, whereas no operation was performed in the 5 failures (table 8). One of the 5 failures ultimately came to amputation of the foot for extensive osteomyelitis of the entire tarsus. Complete wound healing is known to have occurred in 25 of the 40 successful cases, and the wound was clean and granulating at the time of the report in 13 others. Of the 6 cases in which improvement occurred without sequestrectomy, recurrent infection in a previously healed wound subsequently developed in 2.

A review of the data sheets reveals the fact that the scarcity of penicillin has led to its use for only the more seriously infected patients with extensive anatomic defects. The period between penicillin therapy of the infection and complete wound healing may be considerable. The results as given for the 45 patients followed through to wound healing are substantiated by the clinical progress of 20 other patients incompletely healed at the present time. It is significant that no death has resulted from this early correction of the infected fractures. The importance of the studies to date lies in the demonstration that penicillin permits active surgical intervention almost immediately. Many of the patients reported as healed will require reconstructive operations. It is premature to draw any conclusions as to the role of penicillin in such a program. The incidence of late recurrence of infection cannot be predicted. The need for continued observation of these patients is recognized.

#### SUMMARY

For the routine systemic administration of penicillin there is a preference for the intramuscular route. Intravenous therapy is used for the constant administration of the drug in cases of immediately life endangering infections. In the treatment of meningitis, penicillin has been injected into the lumbar space, the cistern and the ventricles. Systemic therapy has been used initially. Local therapy has been supplemental and effective in those wounds appropriate for topical therapy. In many cases a short period of systemic therapy has been followed by local treatment of an operative wound.

It is premature to attempt a precise definition of dosage. The quality and potency of penicillin are still showing rapid improvement. A safe average dose for streptococcal and similarly sensitive bacterial infection



tions is about 90,000 units per day given in divided doses intramuscularly every four hours. Staphylococcal infections require 200,000 to 400,000 units daily given in divided doses every three hours intramuscularly. Solutions for local therapy containing 250 units per cubic centimeter have been satisfactory.

The untoward reactions attributable to penicillin are analogous to the syndrome of serum sickness. Urticarial reactions have been noted in approximately 5 per cent of the cases and have occurred as a complication of local therapy without parenteral penicillin. The urticaria may appear after the first dose or as long as nine days after the last dose. It appears equally frequently in the various weeks of treatment. Fever and, more rarely, abdominal cramps may appear with urticaria. Fever with dermatographia and no urticaria has been seen. These reactions suggest a form of

TABLE 2—*Metabolic Balance as Affected by Penicillin Therapy in a Convalescent Patient*

	Period 1—4 Days No Penicillin	Period 2—4 Days With Penicillin
<b>Intake in grams</b>		
Calcium	0.88	0.88
Phosphorus	5.33	5.33
Nitrogen	70.2	70.2
<b>Urine output in grams</b>		
Calcium	2.20	2.40
Phosphorus	4.80	4.83
Nitrogen	63.0	61.9
<b>Urine volume in cc</b>	11,518	11,145
<b>Stool output in grams</b>		
Calcium	1.42	1.28
Phosphorus	2.14	1.73
Nitrogen	12.7	11.5
<b>Total output in grams</b>		
Calcium	3.71	3.68
Phosphorus	6.90	6.56
Nitrogen	70.3	73.4
<b>Metabolic balance</b>		
Calcium	-2.83	-2.80
Phosphorus	-1.66	-1.22
Nitrogen	-6.1	-3.2

sensitization, but tests for sensitivity are negative. Treatment can be continued usually through the three to five day period of urticaria with subsidence of the reaction. There is no evidence of permanent sensitization to penicillin.

The results in the treatment of acute infections due to staphylococci and the sulfonamide resistant streptococci are additional proof that penicillin is an exceptionally potent antibacterial agent. The inability of the drug to control staphylococcal endocarditis has been confirmed. Evidence is accumulating that surgical intervention is often necessary in the penicillin therapy of staphylococcal osteomyelitis of the long bones, whereas a more conservative program is warranted in infections of the flat bones. Temporary improvement has been recorded during brief periods of treatment in actinomycotic infections. In general, the response to therapy is conditioned by the susceptibility of the infecting organism and the pathologic anatomy of the inflammatory process.

Particular emphasis has been given in this report to the usefulness of penicillin in the immediate management of septic gunshot fractures. When susceptible

bacteria predominate in a wound there is prompt improvement during treatment with recurrence later. This recurrence is due to sequestrums or foreign bodies and the inability of penicillin to sterilize such foci of infection. Surgical intervention is necessary in most

TABLE 3—*Analysis of Bacterial Flora in 34 Cases of Putrid Infection in Septic Gunshot Fractures*

1. <i>Proteolytic clostridia</i>	32
2. <i>Proteus bacilli</i>	18*
3. <i>Nonhemolytic streptococci</i>	19
a. <i>Mesophilic</i>	6
b. <i>Thermophilic</i>	9
c. <i>Mixed</i>	4

\* *Proteus bacilli* were present with *clostridia* in 17 cases.

TABLE 4—*Serologic Grouping of Beta Hemolytic Streptococci*

Group A	6	Not group A	B	C	4
Group B	0	Not tested			4
Group C	1				—
Total					15

instances. Operations on patients with chronic infections are notorious for their incidence of shock, anoxic complications and prolonged convalescence. It is not surprising that this investigative program has been concerned with intensive operative preparation and postoperative care.

The "unsteady state" of these patients has been related to a reduced blood volume, a deficiency of the total circulating and available hemoglobin and an excessive interstitial fluid volume.

The blood volume is always small in relation to the standard, but considerable fluctuation in the actual

TABLE 5—*Bacteriology of Septic Gunshot Fractures*

Type of Infection	Number of Cases
<b>Putrid only</b>	4
+ <i>Staphylococcus</i>	9
+ <i>Staphylococcus</i> and hemolytic streptococcus	5
+ <i>Pyocyanus</i>	5
+ <i>Staphylococcus</i> hemolytic streptococcus and pyocyanus	5
+ <i>Staphylococcus</i> and pyocyanus	4
+ Hemolytic streptococcus	2
+ Hemolytic streptococcus and pyocyanus	0
<b>Staphylococcus only</b>	4
+ Hemolytic streptococcus	1
+ <i>Pyocyanus</i>	1
+ Hemolytic streptococcus and pyocyanus	1
<b>Hemolytic streptococcus only</b>	0
+ <i>Pyocyanus</i>	1
<b>Pyocyanus only</b>	0
<b>Total</b>	40
Putrid infections	34 or 74%
Staphylococcal infections	30 or 60%
Hemolytic streptococcal infection	15 or 33%
Pyocyanus infections	12 or 26%

size of the blood volume occurs without apparent cause. Such a finding is not surprising in view of the increased interstitial fluid volume. During these phases of hemoconcentration and hemodilution there is considerable variation in the concentration of red cells, hematocrit, hemoglobin and serum protein. The usual laboratory findings show wide discrepancies from day to day unless

they are interpreted in terms of total circulating quantities on the basis of a known blood volume

A positive nitrogen balance may be established by an adequate diet alone, but restoration of hemoglobin values demands effective control of the infection. Penicillin therapy is associated with an improved appe-

TABLE 6—*Response to Penicillin*

Type of Infection	Penicillin Response	
	Systemic	Local
I Putrid		
1 Proteolytic clostridia	+	+
	(large dosage)	
2 Proteus bacilli	0	0
3 Nonhemolytic streptococcus		
a Mesophilic	+	+
b Thermophilic (Strept. faecalis)	0	0
		(or slight)
II Staphylococcus	+	+
	(1-3 days)	(often necessary)
III Hemolytic streptococcus	+	+
	(1-3 days)	(not essential)
IV Pseudomonas (pyocyanus)	0	0

tite and effective repair of hemoglobin deficits. The rate of metabolic regeneration is too slow to keep pace with the needs of an operative program, however, and economy of penicillin and hospitalization requires a supplemental source of hemoglobin. Whole blood meets this demand more effectively than plasma. The quantity is formidable. It is estimated that 1,500 to 3,000 cc of blood per patient is necessary.

The bacteria present in the wounds are variously susceptible to penicillin and are important limiting factors in the choice of operative procedure in a given case. The staphylococci and hemolytic streptococci can be controlled effectively in the great majority of instances. Pyocyanus is not inhibited and has a high nuisance value but rarely does more than delay wound healing. The proteolytic bacteria of putrid wound infection are present in three fourths of the cases.

TABLE 7—*Results of Treatment of Septic Compound Fractures\**

Site	No. of Cases	Improved	Died	No Effect
Thigh	17	13	0	4
Lower leg	12	12	0	0
Foot and ankle	8	7	0	1
Upper extremity	7	7	0	0
Skull	1	1	0	0
	45	40	0	5

\* This series is composed of cases followed for a sufficient period of time to allow evaluation and should be distinguished from the group of 16 cases reported in the bacteriologic analysis.

Anaerobic cellulitis is favorably influenced by penicillin given systemically in large doses. High concentrations of locally applied drug are necessary for the maximal inhibition of the proteolytic clostridia and the non-hemolytic streptococci. Proteus and the faecalis groups of streptococci are insensitive to penicillin. Putrid wound infection is a contraindication to extensive surgical revision or primary wound closure even when penicillin is given.

The results in the treatment of septic gunshot fractures indicate that dramatically successful results may be achieved by the meticulous surgeon who combines penicillin, effective blood transfusions and conservative surgical procedures into a program of thoughtful management of individual cases.

## CONCLUSIONS

- 1 Penicillin has been administered intravenously, intramuscularly, intrathecally and locally. The indications for each of these routes have been established.
- 2 The untoward complications noted in this series have been limited to urticaria and other reactions suggesting an analogy to serum sickness. The reactions are transient during therapy and there is no permanent sensitization. No significantly harmful effects have been observed.
- 3 Penicillin is an effective antibacterial agent in the treatment of acute infections caused by staphylococci, hemolytic and nonhemolytic streptococci, mixed infections due to gram positive bacteria and actinomycosis. The gram negative diplococci are susceptible to treatment. Gram negative bacilli are resistant. Mixed infections with both gram positive and gram negative bacteria may be benefited through the effect on the susceptible bacterial species. Malaria has not been controlled by penicillin.
- 4 An intensive investigation of the clinical status of patients with chronically infected gunshot fractures

TABLE 8—*Relation of Sequestrectomy to Result of Penicillin Therapy*

	Number of Cases	Sequestrectomy
Improved	40	34
No effect	5	0

has revealed a major deficiency of red blood cells and hemoglobin. Positive nitrogen balance may be established in the presence of continuing infection, but the synthesis of new tissue proteins and the regeneration of red cells and hemoglobin are dependent on control of the infection. The dramatic effectiveness of penicillin in rapidly establishing this phase of convalescence is added proof of the unique position of the drug among antibacterial agents. The normal rate of hemoglobin regeneration is not surpassed, and whole blood transfusion therapy is necessary.

5 The polymicrobial character of septic gunshot fractures has been defined in terms of putrid wound infection, staphylococcal infection, hemolytic streptococcus infection and Pyocyanus infection. Staphylococci and streptococci are rapidly responsive to therapy. Anaerobic cellulitis due to the proteolytic bacteria of putrid wound infection responds to penicillin, but the bacteria may persist in the presence of devitalized tissue or wound exudates. Pyocyanus is not susceptible to penicillin and is relatively unimportant as a single pathogen in the surgical management of the wound.

6 Penicillin therapy permits a direct and immediate surgical approach to the management of septic gunshot fractures. Its role in this regard is analogous to the use of vitamin K for patients with obstructive jaundice. Such a concept emphasizes the limitations of penicillin therapy and designates the supplemental position of penicillin in the overall surgical program.

## TRIBAL EPIDEMICS IN THE YUKON

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Native peoples in isolated parts of the world frequently experience fulminating epidemics following exposure to inhabitants of populated regions. The American Indians have recently experienced such epidemics along the course of the new Alaska Military Highway over previously remote regions of Alaska and Canada. Among these may be cited the diphtheria epidemic among the Indians on the Ross River during August 1943 and a pneumonia epidemic which has resulted in the death of 50 of the 200 or more inhabitants of Telegraph Creek, British Columbia, between October 1942 and September 1943. The sequence of epidemics at the Indian settlement on Teslin Lake, in the Yukon Territory, reflects certain endemic diseases of populous areas which may constitute a hazard to remote communities.

The Indian village at the junction of Nisutlin Bay with Teslin Lake contains about 130 individuals who have had little exposure to outside civilization since the great gold rush of 1896. The tribe, which speaks the language of the Tlingit Indians of Alaska,<sup>1</sup> once descended the Takou River each spring to peddle furs at Juneau. From the time of the Klondike gold rush the people settled at a trading post established midway along the 110 mile expanse of Teslin Lake. Living along the trap lines in winter and returning to the lake village each summer for hunting and fishing, they have had little intercourse with the white man for almost half a century except through a few traders, mounted police and missionaries.

Work on the Alaska Highway in the spring of 1942 brought a change in the Indian way of life. The men worked on construction projects instead of going on the hunt, and the settlement was visited by numerous soldiers and workmen recently arrived from metropolitan areas. For the first time the tribe wintered in the village instead of going out along the trap lines. During the long preceding interval of isolation there had been little infectious disease except for occasional upper respiratory ailments in the spring trading season and one relatively severe epidemic of respiratory disease in 1936 supposedly introduced by placer gold miners. Acute illness was regularly absent during the months spent in the bush.

The first outbreak of serious infectious disease began in 1942, on September 20 of the summer during which construction work was begun. Within a month, in spite of strict quarantine measures, measles had spread to 121 natives and 8 half breeds in a population of 135 and had resulted in three deaths from a complicating bronchopneumonia. Of the 6 natives spared by the epidemic, 5 were more than 70 years of age and 1 a girl of 18 thought to have had the disease while away at school. Shortly after the appearance of measles more than half the tribe also came down with diarrhea.

This was identified as dysentery. The patients were observed and treated by army officers from a nearby dispensary.

In the year which followed, a succession of other infectious diseases invaded the village. Cases of jaundice began to appear in January 1943, the symptoms usually consisting of visible jaundice accompanied by malaise, anorexia and vomiting. This disease, which appears to have been catarrhal jaundice, affected only a few at a time but had reached nearly all the inhabitants within a period of four months. In April 1943 whooping cough appeared. This too spread to nearly every one but did not result in any fatalities. In June 1943 German measles reached nearly all. There were also sporadic cases of mumps, tonsillitis and middle ear disease complicating upper respiratory ailments. Tuberculosis was diagnosed in 3 cases, but this disease has been endemic among the local tribes for a long time.

The largest number of fatalities accompanied the meningococcic meningitis epidemic which began in the summer of 1943. On the morning of June 28 a 17 year old Indian youth died suddenly after an illness of twenty-four hours. The symptoms included drowsiness, headache, stiff neck, fever, vomiting, abdominal cramps and finally a shower of purpuric spots on the skin. On the following day 3 other Indians had developed similar symptoms. They were transported 100 miles by hydroplane to the Whitehorse General Hospital, where a diagnosis of meningococcic meningitis was made from spinal fluid studies by Dr F B Roth. Two of these patients died soon after arriving at the hospital. One was a 22 year old brother of the first victim, the other a girl of 4 from the family next door. The third, a youth of 18, responded to therapy and recovered.

In the week which followed 6 more children from 2 to 18 years of age developed a sudden febrile illness with a similar onset consisting of irritability, restlessness, drowsiness, headache and varying degrees of stiff neck. Five were treated on the day of onset of symptoms and responded promptly to sulfadiazine therapy. In the youngest, aged 2, the disease was not recognized or treated until the third day after the onset of symptoms. This infant, a brother of the 4 year old girl who died, received four days of intensive therapy with sulfadiazine and intravenous and intrathecal antimeningococcus serum before the spinal fluid became clear and there was evidence of recovery. On July 16 the 6 year old son of the chief of the tribe developed the same sequence of symptoms and died within ten hours. He was examined at the time of death, and purulent spinal fluid was obtained which contained gram-negative diplococci. A small brother and sister and a cousin next door developed headache and fever but recovered after a few days of treatment with sulfadiazine. Altogether 14 children became ill and 4 died but no known cases of meningitis occurred among children or adults outside the tribe.

## COMMENT

The popular impression that these epidemics were a menace to the neighboring population resulted in the imposition of strict quarantine measures intended to prevent the contagion from spreading from the village to nearby troops and workmen. It is apparent, however, that these recent epidemics among the Teslin

From the P R A Rancheria River Hospital on the Alaska Highway. This work was done under the auspices of the University Committee on Pharmacotherapy.

Dr Marchand was formerly research fellow in pharmacotherapy at Harvard University.

<sup>1</sup> Jenness, Diamond A. The Indians of Canada. National Museum of Canada. Ottawa 1934.

THE TRANSFUSION OF BLOOD AND  
BLOOD DERIVATIVES UNDER  
EMERGENCY CONDITIONSJANET M. VAUGHAN, D.M., F.R.C.P.  
LONDON, ENGLAND

Indians can be attributed neither to insauntary living habits, since such habits have changed little from time immemorial, nor to some supposed lack of resistance to disease in general on the part of the Indian. In the meningitis epidemic described, treated patients recovered and the course of both treated and untreated patients was not unlike that observed in white communities. No cases occurred in the neighborhood except among the Indians, and the actual effect of the quarantine was the reverse of that intended, it served only to protect the village from further exposure to carriers among the white men.

Risk to the white population from these tribal epidemics was negligible because exposure was already universal and any one not immune would have contracted the disease previously. The danger of spread to the white population was therefore largely imaginary, but a real psychologic hazard which could readily have precipitated a panic.

It is well known that the common childhood diseases which attacked the Teslin Indian village are endemic in any large white population. The source of the meningococcal meningitis epidemic cited is even more clearly apparent from the fact that the tribe was surrounded by men recently arrived from urban communities where 30 per cent or more of the population carry meningococci in the nose and throat during the summer months. Meningitis occurring under such conditions of universal exposure must therefore be limited to susceptible individuals not previously exposed. This accounts for the appearance of the disease in epidemic form in a remote Indian village and its more sporadic occurrence in metropolitan areas where such infectious diseases are most frequent among small children and persons recently arrived from isolated regions.

## SUMMARY

Infectious diseases endemic in urban communities have appeared along the Alaska Military highway as sudden epidemics among the American Indians. In 1942 and 1943 the native settlement on Teslin Lake was attacked successfully by measles, dysentery, catarrhal jaundice, whooping cough, German measles, mumps, tonsillitis and meningococcal meningitis. There were three fatalities from measles and four from meningitis. The proper medical management of such tribal epidemics requires recognition that the risk of infection is a serious hazard to the native population but not to previously exposed individuals recently arrived from populous areas.

**The Thyroid Gland**—It was just a little over one hundred years ago (1836) that T. W. King at Guy's Hospital in London saw and described for the first time the elementary units of which the thyroid gland is composed—the follicles with a translucent material called colloid. As the result of a long series of clinical and experimental studies, we now know that this gland secretes and supplies the body with a hormone which is of vital importance to body economy. This hormone was isolated and identified as an iodine-containing compound in 1915 by the American chemist E. C. Kendall, who called it thyroxine. It was subsequently (1927) synthesized by the London chemists C. R. Harington and G. Barger. Our knowledge of the physiology and chemistry of the thyroid is intimately bound up with the story of the surgeon's efforts to remove safely enlargements of the thyroid—so-called goiters—Haagensen, C. D., and Lloyd, Wyndham E. B. *A Hundred Years of Medicine*, New York, Sheridan House, Inc., 1943.

The problems which arise in connection with the transfusion of war casualties differ to some extent from the problems of peacetime injuries. In the first place the war casualties transfused are usually healthy persons who have suddenly had a knockout blow, while the peacetime patients are sick people with a weak, if not grossly disordered, cardiovascular mechanism. Secondly the majority of wartime transfusions are given under adverse circumstances. Only too often the bombs responsible for the casualties destroy the lighting system and the heating and the water supplies. The transfusion team, if the incident occurs at night, may be entirely dependent, for instance, on its own light supply. If all the windows in the building have been broken, even electric torches are likely to cause a good deal of concern to air raid wardens in charge of the blackout. Work has to be carried out with a forehead lamp only, the battery being carried in the pocket. Further, the number of patients requiring immediate attention often exceeds the accommodation and the staff is overwhelmed. Such conditions make both laboratory and clinical investigations extremely difficult. The sick patient or the single street accident in peacetime can on the other hand be treated under optimum conditions as regards both general and laboratory facilities.

My object in the present paper is to discuss the principles that have been tentatively formulated as the result of recent experience for the treatment of casualties under the type of emergency conditions outlined.

## TRANSFUSION TEAMS

It has proved both impracticable and unwise to supply every hospital with sufficient transfusion fluids and equipment to enable it to meet any wartime emergency, however severe. In the first place the quantities required for the whole country would reach astronomical figures and secondly if the hospital itself is hit, as has not infrequently occurred, the stocks are destroyed. In practice hospitals have been given enough derivatives and equipment to meet the needs of the first few hours and instructed to telephone immediately to a blood depot for further supplies as soon as the incident occurs. The depot then at once dispatches equipment, blood, derivatives and often personnel trained in transfusion technique. It has been found that this system causes no delay in instituting treatment, since casualties are not usually rescued from ruined buildings for some hours and the transfusion teams reach the hospital in many cases before the patients. In the case of the smaller country hospitals this provision of skilled personnel has proved of considerable value. It is essential that nurses as well as doctors should understand the principles of treating patients suffering from shock. They must be able to record blood pressure readings and manipulate the administering apparatus, since the maintenance of treatment must be left in their hands when large numbers of casualties occur. The importance of adequate maintenance treatment cannot be overstressed. Unless the

patient is constantly watched and the rate and quantity of the transfusion controlled the best results are not obtained. One trained person can at most look after two casualties after the transfusion has once been started and it is preferable to allocate one nurse to each casualty.

#### TYPE OF CASE IN WHICH TRANSFUSION IS REQUIRED

In the early weeks of the blitz on London casualties were considered to require immediate transfusion only if they showed signs of circulatory collapse as evidenced by a blood pressure below 100 mm of mercury, a cold and clammy skin, pallor or cyanosis, restlessness and a rapid thready pulse. If the blood pressure was above this level and the associated signs and symptoms were not present, however severe the injury, the patient was sent to the operating theater without transfusion. It was then noted that many of these patients who had no obvious "shock" on admission showed a rapid deterioration either in the theater or on return to the ward and subsequently died. Others who, owing to their apparently poor condition on admission, were retained for resuscitation and were given transfusions before operation did well.<sup>1</sup> Careful analysis of the available observations made it clear that certain individuals, especially the younger people, may even show a compensatory rise in blood pressure as a result of severe injury.<sup>1</sup> Further trauma however, as for instance debridement in the operating theater, results in a sudden collapse of such patients which even prompt transfusion may then be unable to counteract. It is now widely held that any severely injured patient should be transfused, irrespective of the clinical condition and the level of the blood pressure, before being sent to the operating theater in fact transfusion should be begun as soon as possible after the injury. The victims of severe industrial accidents should be transfused in the factory, the victims of the airplane crash on the site of the incident, battle casualties as near the front line as possible. After the transfusion has been started the patient may be transferred to a hospital for surgical treatment, and the transfusion carried on in the ambulance. It is in this way sometimes possible to prevent a serious fall of blood pressure and resulting renal damage. Recently, of 4 patients with extensive burns, 3 were transfused before a fall in blood pressure had occurred. Subsequently they showed only minimum impairment of renal function. The fourth patient received no transfusion until cleaning up in the theater was almost complete and the blood pressure was unobtainable. Renal impairment in this patient was considerable and he subsequently died.

It is perhaps difficult to define what constitutes a severe injury. Any compound fracture, especially compound fracture of the femur, multiple fractures, severe lacerations of large areas of muscle, crush injuries and second degree burns of an area bigger than one hand, should all be regarded as severe injuries requiring transfusion irrespective of the clinical condition and the blood pressure level.

Though, as already stated, the majority of casualties are healthy persons, it is inevitable that bombs should sometimes fall on the old and infirm. The treatment of elderly subjects who have become casualties presents certain difficulties. Is the woman of 60 with auricular fibrillation or the man of 70 with bronchitis and evidence of hypertension to be transfused with large

quantities of blood or derivatives? If they are not transfused they will die of circulatory failure, therefore the risk of overloading an already damaged heart by forcing fluids into damaged vessels must be taken. In practice such patients have often stood transfusion extremely well.

#### TRANSFUSION FLUIDS

1 *Blood Substitutes*—Such substitutes as pectin and isinglass have not been used. No opinion can therefore be expressed as to their value in the treatment of circulatory failure following injury. No use has been made of saline solution, as adequate supplies of blood and blood derivatives have always been available and are theoretically more suitable.

2 *Blood*—In discussing the relative values of blood and derivatives it is important to distinguish between immediate and late transfusion therapy following injury. The transfusion unit called to the scene of an incident usually carries stored blood and serum or plasma. The bigger hospitals are also stocked with both blood and derivatives, the former in small quantities.

(1) *Immediate Transfusion* Experience has shown that serum and plasma are adequate for the immediate transfusion of all patients suffering from circulatory collapse following injury. There is an impression among surgeons that such patients do better when given blood, but there is no evidence to substantiate this. In one district in London all air raid casualties over a period of months were treated with derivatives only, no blood was made available and the results compared favorably with those obtained elsewhere.<sup>2</sup>

In practice it is usual to give one or more bottles of serum or plasma followed by one or more bottles of stored blood if this is available. Transfusion depots, however, do not all now hold large stocks of blood. In some only enough blood is kept in stock to cover day to day needs and small air raid incidents, since derivatives made from out of date blood are less satisfactory than those made from fresh blood taken especially for the purpose. In the event of a sudden large scale emergency, derivatives are used with every confidence for the first twelve hours, during which time additional supplies of blood are collected and made available for subsequent use.

(2) *Late Transfusion* The importance of transfusion therapy in the first twenty-four hours following injury is now generally recognized, its importance in the later stage is less well appreciated. It has, however, been found that following injury anemia develops with remarkable frequency. This is particularly true in the case of burns. This anemia may be extremely severe when associated with extensive burns, as shown in the case to be reported but is found in milder degree following less serious burns. Two patients who had second and third degree burns of the hands and face only showed a fall in hemoglobin from 100 per cent (Haldane) to 70 per cent (Haldane) within eight days. This was associated with the appearance of nucleated red cells in the peripheral blood in 1 patient. The cause of this anemia its occurrence and its nature require further study but are not for discussion here. It must, however, be looked for in all cases and obviously requires treatment with blood rather than derivatives. On theoretical grounds it might be argued that fresh blood should be transfused at this stage largely because sepsis is often present and leukocytes which may

<sup>1</sup> Grant R. T. and Reeve E. B. Brit. M. J. 2 293 (Aug. 30) 329 (Sept. 6) 1941

<sup>2</sup> Brown H. A. and Molison P. L. J. 2: 1940



value rapidly deteriorate in stored blood. No controlled experiments have, however, been carried out to prove that fresh blood is preferable to stored blood even in such cases. Many patients have indeed done extremely well who have received preparations of concentrated red cells prepared from stored blood.

**Stored Blood**—For routine purposes 420 cc of blood is taken into an anticoagulant mixture consisting of 100 cc of 3 per cent sodium citrate in distilled water to which is added 20 cc of 15 per cent dextrose in distilled water. The survival rate of the red cells in this preservative is satisfactory up to fourteen days. Recently a more acid dextrose citrate diluent has been used which gives satisfactory survival up to twenty-one days at least.<sup>3</sup> For emergency use only group O blood is stored and issued. For the treatment of anemia that may develop later, blood of the same group as the donor is supplied whenever possible. A rigid technic for the determination of blood groups is adopted by all the blood supply depots organized by the Ministry of Health and Medical Research Council.<sup>4</sup> When trained personnel are available direct matching of the donor's cells against the recipient's serum is carried out. High standards in grouping technic have proved to be a basic requirement of any efficient transfusion service.

#### BLOOD DERIVATIVES

In treating large numbers of severely injured patients when speedy action is essential, derivatives have the advantage over blood that they can be given without preliminary cross matching. For this reason it is usual to start treatment immediately with plasma or serum and, while the first one or two bottles are running in, cross matching may be carried out, and if further fluid is available and required, blood known to be compatible may then be given. Serum and plasma have been used extensively since the spring of 1940 in both fluid and dried form. All observers agree that the clinical results obtained are equally satisfactory with all preparations. Actual records are available of 1,600 bottles of serum and 368 of plasma used in the area served by the Northwest London Blood Supply Depot for the treatment of acute cases. No severe or alarming reaction of any sort was reported. In a few instances there was some rise of temperature, a rigor or vomiting, but such incidents are not unlikely to occur without transfusion in the severely injured patient who may also have had a general anesthetic. Reactions of a more severe sort have been noted in medical patients, such as those with nephrosis or ulcerative colitis, to whom derivatives have been given to raise the serum protein level. The cause of such reactions is obscure and is being further investigated; the problem is clearly an academic one, since reactions are not seen in the traumatic cases for which derivatives are at present needed. From the clinical point of view, dried are to be preferred to fluid preparations for the following reasons:

i. A dried preparation is always sterile, while it is less easy to be sure of sterility in fluid preparations.

ii. The concentration of protein given can be varied by altering the amount of diluent added. This is of considerable importance especially in the treatment of burns, as will be discussed later.

iii. Different diluents may be used for reconstituting the dried products, for instance, distilled water, dextrose or saline solution may be added.

**Concentration of Derivative**—For patients with circulatory collapse following operation, delivery or trauma, apart from burns and possibly crush injuries, derivatives are used in normal concentration. The circulatory collapse associated with injury other than burns or crush is dependent on a reduction in circulating blood volume due to loss of fluid, either into the tissues or externally. This fluid in the great majority of cases is probably whole blood, since hemoconcentration is not seen.<sup>5</sup> In order to restore this volume it is essential to administer fluid as well as protein and salts. Theoretically fluid might be administered by mouth and the protein and salts given in concentrated form by intravenous injection, but for severely injured patients who may be delirious, vomiting or unable to help themselves it is much simpler to administer fluid by the same route as other necessary therapy. These derivatives are given in normal concentration in an attempt to supply protein, salts and fluid.

In the case of burns the situation is different. Hemoconcentration is almost invariably present. Even when only such a small area as one hand is burnt some degree of hemoconcentration is often found. This is due to loss of fluid into the skin and subcutaneous tissues and to actual exudation from the burnt areas.<sup>6</sup> The immediate need is to replace fluid and reduce the hemoconcentration. For this purpose it is clearly better to use derivatives than whole blood which will add cells to the already concentrated circulating fluid. Proteins as well as fluid, however, pass out into the burnt areas and need replacement, it is therefore an advantage to give at least a twice concentrated derivative. The use of concentrated derivatives has been found in practice to serve a further important function, since it reduces the local edema present in the burnt areas. Such reduction, especially of the facial edema, is difficult to assess accurately. Two patients were seen recently who had second and third degree burns of the face and hands; one had also a compound fracture of the right tibia and fibula and the other an injury to his right knee. Both were treated with approximately 1 liter of twice concentrated serum on admission. Fifteen hours later one was given a further 400 cc of three times concentrated serum with the object of reducing the facial edema, since both the blood pressure and hemoglobin levels were satisfactory. Within a few hours there was a definite difference between the faces of the 2 patients. The man who had received further doses of concentrated serum was much less tense and swollen than the one who had not. The difference in their general condition was equally definite. Unless certain special preparations are used, more than twice concentrated derivatives are rather viscid.

In transfusing a severely shocked patient when it may anyhow be difficult to maintain an adequate rate of flow, this is a disadvantage. In practice, therefore, in the Northwest London area it is usual to give patients with burns an initial dose of twice concentrated serum followed, especially if the face is affected, by further treatment with three or four times concentrated serum. At the same time every effort is made to ensure as large an intake of fluid by mouth as possible.

It has been found that patients with burns affecting only a small area of the body surface, such as one hand, may often show some degree of hemoconcentration. An initial transfusion of about 800 cc of twice concentrated derivative is therefore now given to all such patients.

<sup>3</sup> Louttit, J. F., Mollison, P. L., Murray, H., and Young, I. M. Personal communication to the author.

<sup>4</sup> The Determination of Blood Groups, Medical Research Council War Memorandum No. 9, London, His Majesty's Stationery Office, 1943.

<sup>5</sup> Leach, E. H., Peters, R. A., and Rossiter, R. J. J. Exper. Physiol. 32, 67, 1943.

*Diluent for Blood Derivatives*—Satisfactory results are obtained with distilled water, isotonic solution of sodium chloride and dextrose solution as a diluent for blood derivatives. In the case of burns it is, however, a great advantage to use dextrose wherever possible. If only fluid derivatives are available 10 cc of 50 per cent dextrose may be added to each bottle of derivative (containing 400 cc of fluid). If dried products are used they may be dissolved in 5 per cent dextrose. It has been found that patients vomit less and are in better general condition during the first forty-eight hours when dextrose rather than distilled water is used. This is possibly due to the effect of dextrose in mitigating liver damage.<sup>6</sup>

#### DOSAGE

*Immediate Transfusion*—No hard and fast rule can be laid down for dosage of blood or derivatives. Each patient must be treated individually and should be watched throughout the transfusion, serial blood pressure readings being made. If the patient when first seen has a low blood pressure, enough fluid must be given to raise the blood pressure to 100 mm. of mercury and maintain it at that level for half an hour before the patient is allowed to go to the operating theater. When possible the transfusion should be continued throughout the operation and on the return to the ward. For some patients 500 cc may be sufficient to raise and maintain the blood pressure; for others it may be necessary to give 2 to 4 liters to raise the pressure and more will be required to maintain it during the period of operation. No case should be regarded as hopeless until at least 3 liters has been given without any rise in pressure or clinical improvement. To a patient with a severe injury but an initial high pressure at least 1 liter should be given before allowing the patient to go to the theater and more during the operation. The pressure of such patients often falls to normal levels while the transfusion is in progress. The pulse rate has proved a most unreliable guide to treatment. Both fast and slow pulse rates have been found in association with a low blood pressure. As the blood pressure rises the pulse rate may, if it is already rapid, become slower or, if originally slow, it may quicken. Of patients in whom it is impossible to take a blood pressure because, for instance, both arms are broken the quality of the pulse may give some indication of the quantity of fluid to be administered, but serial blood pressure readings should never be omitted even under the most adverse circumstances if they can possibly be obtained. Hemoconcentration is rarely if ever found except following burns or crush injuries. From the point of view of treatment and apart from the collection of data which may be of value in our understanding of the general pathology of the effects of injury, serial hemoglobin readings are of little value in the acute stage following simple trauma. In the case of burns and crush injuries they are an essential guide to treatment. An attempt should be made to take serial hemoglobin readings at at least two hourly intervals for the first twenty-four hours even under the most adverse circumstances. In such cases derivatives must be administered until the hemoglobin level is at or below 100 per cent (Haldane). If the blood pressure is then also satisfactory the transfusion may be stopped or the rate reduced to an extremely slow drip. Further observations must, however, be made to ensure that hemoconcentration does not recur. If it does further fluid must be given. Additional interesting information is obtained if it is possible

to take hematocrit readings. It must however, be remembered that the number of veins of the severely injured patients are often limited, centrifuges are not always available and personnel are insufficient when many burns have to be attended to at once. Unless red cell counts are also done, the hematocrit reading is likely to be misleading.<sup>7</sup> In practice hemoglobin determinations alone have proved a satisfactory guide to treatment in the acute stage.

Experience has shown that there is little risk of overdosage, while many lives have undoubtedly been lost by underdosage. A patient with extremely severe burns was given 25 pints of serum in forty-eight hours because whenever the transfusion was stopped he became restless, the blood pressure fell and hemoconcentration occurred. When the transfusion was resumed the patient slept quietly, the blood pressure rose and the hemoglobin fell to normal levels. At postmortem no fluid was found in the body cavities, and lung tissue floated. Considerable amounts of fluid were found however, in the muscles. The risk of causing edema of the lungs appears to be extremely slight.

*Late Transfusion*—In the case of later transfusion therapy it is essential to have available daily red and white cell counts, hemoglobin determinations and protein estimations. Anemia developing at the end of the second or third week associated with hypoproteinemia is commonly seen in burns. Leukocytosis is usually found, but a white cell count of under 2,000 per cubic millimeter may occur, unassociated with sulfonamide therapy. At this stage, as already stated, whole blood should be given in doses sufficient to maintain a satisfactory hemoglobin, white cell and protein level. Again no rule for dosage can be given, each case must be judged on its merits. It must be remembered, however, that repeated large transfusions are often necessary. The most satisfactory results are obtained with blood of the same group as the patient rather than with universal donor blood. Transfusions must be continued in some instances at intervals over several weeks. Some of these points are illustrated by the subjoined case report and the accompanying chart.

M. S., a man aged 28, was burned at 7 p. m. by his clothes catching fire. At 10 30 he was admitted to the hospital. The blood pressure was 130 systolic, 78 diastolic. There were second degree burns with small areas of third degree of the neck, back, buttocks, both legs, upper arms, hands and wrists. At 11 30 p. m. cleaning up was begun in the theater with saline solution and 1 per cent gentian violet. Tanning was done with 10 per cent gentian violet and gentian violet jelly. Sulfanilamide powder and tulle gras were employed on the hands and round the anus. At 12 30 transfusion was started while the patient was still in the theater. The hemoglobin prior to transfusion was 120 per cent (Haldane). Further blood pressure readings were unobtainable owing to dressings. The patient was returned to the ward at 1 30 a. m. During the first twelve hours 1,500 cc of twice concentrated serum was given, and during this period the hemoglobin fell to 80 per cent. The patient was taking fluids well by mouth and was not vomiting. Two days later he developed a cough and signs in his chest and he was given sulfapyridine 4 grams (0.25 Gm.) every four hours. On the fifth day the hemoglobin was 50 per cent and the red cell count 2 500 000 per cubic millimeter. He was given 2 pints of fresh group O blood. The count continued to fall and on the seventh day his hemoglobin had fallen to 36 per cent, red cells numbered 1 700 000 and white cells numbered 40 000. There were 29 nucleated red cells per hundred white cells, many of them extremely immature. The serum protein was 6.4 Gm per hundred cubic centimeters and the blood urea 66 mg per hundred cubic centimeters. Two pints

<sup>6</sup> Wilson W. C. Macgregor A. H. and Stewart C. I. Brit J Surg 25 8-6 (April) 1938

<sup>7</sup> Brown G. L. Miles J. A. R. Vaughan Janet M. and Whitby L. E. H. Brit M J 1 99 (Jan 24) 1942.

of group A blood, the patient being group A, was given with some improvement in the hemoglobin and serum protein and a fall in the blood urea. The rise in hemoglobin was, however, slight and there was a further fall in serum protein to 5.2 Gm per hundred cubic centimeters, the albumin fraction being greatly reduced. He was given a further 2 pints on the tenth day and a further 2 pints on the sixteenth day. After this point the hemoglobin and protein rose steadily to a satisfactory level which was maintained. Throughout the period of observation urinary output was satisfactory, though albumin, hyaline casts and urobilin were present during the first few days. Serum bilirubin reached a maximum figure of 2.85 on the third day and then fell, being below 1 mg on the ninth day, though the urine still contained much urobilin. Detailed bacteriologic investigations were not made, as facilities were not available. Hemolytic streptococci were not found.

It is recognized that this patient should have been transfused before he went to the theater and that in the later stage he should theoretically have been given larger transfusions to produce a more rapid rise of hemoglobin. He had, however, only one vein available, all the rest of the body being burnt. This vein was in the antecubital fossa with burns above and below, and as the patient was nursed on his face it was something

proved particularly important when the veins of the leg are used, since even if they are not collapsed these veins are liable to undergo spasm, especially when serum is used.

*Late Transfusion*—After the first twenty-four hours, all transfusions should be given at a slow drip rate.

#### SITE OF ADMINISTRATION

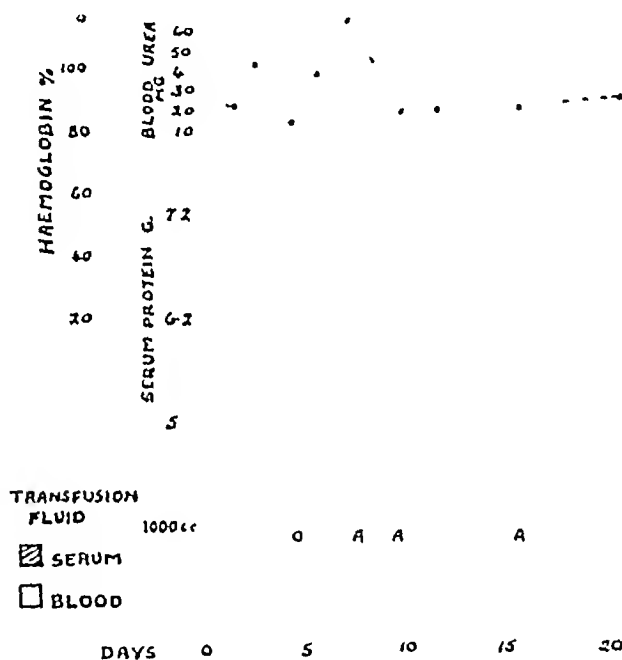
The vein in the antecubital fossa, though often the most obvious, is not the site of choice. Even though the arm is splinted the restless patient is likely to bend the arm slightly and in so doing jerk the needle out of position. A splint also adds to the patient's general discomfort. If possible a small vein on the front of the forearm should be used. When the needle is in the vein the rubber tubing is curled round and strapped in position so that no direct pull is exerted on the needle if the tubing above the needle is jerked. The patient is also able to move the arm freely without affecting the position of the needle. The stability of the apparatus is of considerable consequence, since it is important to start transfusion as soon after injury as possible though the patient may have to be moved considerable distances immediately it has been begun. In adults, especially if the arm is first warmed by the application of a hot water bottle, no difficulty is usually experienced in finding the veins of the forearm.

If both arms are injured and the leg has to be used, it is wise to cut down and insert a cannula into the internal saphenous vein without trying to perform a venipuncture. Pressure will almost always be required to maintain an adequate flow of fluid for at least the first 500 cc when a leg vein is used.

If a patient has been severely burnt no vein may be available. Fluid can then be administered by the sternal route. Indeed this has often proved to be a life saving measure. The Salah or other sternal puncture needle should be regarded as a routine piece of equipment for every resuscitation team. If no special needle is available a saved off lumbar puncture needle may be used. The needle is passed into the sternal cavity in the usual way, filled with sterile saline or citrate solution by means of a syringe and connected with the routine administering unit. If pressure is not applied, 400 to 500 cc can be usually given by this route in about forty minutes. If pressure is applied the rate is quickened. The needle may sometimes appear to get blocked, but if one changes the position of the needle without actually withdrawing it the flow usually is restored. Large quantities may be given successfully by this route.

#### CONCLUSION

This paper has been concerned with only one aspect of the treatment of the severely injured patient, namely transfusion. The personnel of a transfusion unit must, however, be prepared to administer and control other measures adopted for the resuscitation of casualties. The use of heat or cold, of oxygen and of sedatives and the administration of fluids by mouth must all be considered and adjusted to meet the needs of each particular patient, special attention being paid to both respiratory and renal function. A satisfactory blood pressure and hemoglobin level is of little value if associated with greatly reduced urinary output. Further, the necessity of the closest cooperation in all aspects of treatment between the resuscitation unit, the surgical unit and the anesthetist must be recognized if the best results are to be obtained.



Hemoglobin, serum protein and blood urea levels in a patient with severe burns treated with serum and blood transfusion.

of a gymnastic feat to insert the needle and not too easy to retain it in position for long periods. It might be commented that in this case the sulfapyridine was a complicating factor. It may have been, but anemia has also been noted in patients who have not received sulfonamide drugs. The patient made an excellent recovery.

#### RATE OF ADMINISTRATION

*Immediate Transfusion*—As already stated, the type of patient under consideration is usually healthy. The rapid administration of at least a liter of fluid does not cause cardiac embarrassment. It is safe and often essential to give this quantity in the first half hour, further amounts may then be given at a drip rate depending on the level of the blood pressure. It is often necessary to give this initial volume with the help of pressure, since circulatory failure may have led to complete collapse of the veins and gravity alone is insufficient to cause a free flow of fluid. Later the flow usually becomes satisfactory with gravity. Pressure is most readily applied by means of a Higginson syringe or other form of rubber bulb attached to the air entry tube of the transfusion bottle. The use of pressure has

It may be concluded that much has been learnt in the last four years about transfusion therapy, following severe trauma. The use of massive dosage of both blood and of high quality derivatives and the recognition of the late development of anemia has greatly increased the chance of survival of the severely injured person. It is, however, clear that there is still much that is obscure about the underlying disturbances of function that result from such injuries. Why do some individuals require only 400 cc and others several liters to restore their circulation? Why does severe injury result in impairment of renal function? Why does even a small burn lead to the development of anemia?

Careful and detailed studies carried out under optimum working conditions rather than under emergency conditions, on human beings rather than on animals, are required. The accident wards of any large hospital should provide the necessary material. Even under emergency conditions it has been shown that the best results are obtained only by a careful study and analysis of factors such as the blood pressure and hemoglobin in each individual patient. Controlled though simple observations rather than clinical judgment are the necessary guides to transfusion therapy.

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## TOXIC NECROSIS OF THE LIVER FROM TRINITROTOLUENE

### REPORT OF THREE CASES

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Trinitrotoluene poisoning is primarily a civilian war-time problem. In the first world war there occurred among the munition workers in several plants in the United States 17,000 instances of poisoning with 475 deaths<sup>1</sup>. Apparently in the present conflict the incidence is much lower, although no statistics are available as yet. Doubtless there are many reasons for the improvement. Roberts,<sup>2</sup> Bedford<sup>3</sup> and other British physicians<sup>4</sup> have emphasized the important role of the physician in the prevention of disease by careful selection of workers, determination of their condition at the time of employment and constant supervision. In the modern munition plants every effort is made to protect the worker. The employees are provided with freshly laundered uniforms daily, a shower bath is required at the end of the work period, ventilation has been improved, respirators have been provided in some instances, but nevertheless exposure to dust and fumes is sometimes excessive. Evans observed 7 cases of jaundice, 2 of them fatal, in one factory in England in 1941. Toxic necrosis of the liver is one of the rarer manifestations of trinitrotoluene poisoning, but it is fatal in approximately one third of the patients so

afflicted.<sup>6</sup> The present cases are reported to emphasize the problems involved. Similar isolated instances are probably occurring among munition workers throughout the country.

### REPORT OF CASES

CASE 1—R, a man aged 46, was admitted to the hospital on May 3, 1943 because of progressive jaundice of five or six weeks' duration accompanied in the last two weeks by weakness, a 15 pound (6.8 Kg) loss of weight, and clay colored stools. For two and one-half months prior to the onset of the jaundice the patient had been employed in an ordnance plant engaged in the loading of shells with trinitrotoluene and other explosives.

The record disclosed that for the first three and a half weeks of his employment the patient was not exposed to trinitrotoluene in any form. For thirteen days from Feb 4 to Feb 18, 1943 he spent a total of ninety-five hours in a 'cubicle' tending a vat of a fuming mixture of trinitrotoluene. "Sores" in the nostrils appeared during this period. These would bleed and crust over and were attributed by the patient to the fumes. From February 19 to April 20 the patient had little or no exposure to explosive, being engaged in the baling of empty cardboard boxes, some of which, although cleaned, may nevertheless have been contaminated with particles of powder. Weakness, fatigability and shortness of breath developed as the jaundice progressed. A local physician prescribed a 'liquid medicine and some green pills'. The patient continued to work until two weeks before admission to the hospital.

On admission there was some dull, boring, intermittent but not colicky pain in the left hypochondrium. The patient's past history and the systemic inquiry yielded no relevant information. Physical examination revealed that the patient was well nourished, well developed and deeply jaundiced. He weighed 170 pounds (77 Kg). The spleen was not palpated. The lower border of the liver was palpable about 6 cm below the costal border in the right midclavicular line. The blood picture was normal and remained so. During the first week of hospitalization the oral temperature fluctuated between 99 and 100 F and then remained normal. The blood Wassermann and Kahn reactions were negative. On two occasions the red blood count was 5,000,000 with a hemoglobin of 15 Gm and a white cell count of 8,200, containing 63 per cent polymorphonuclears, 9 per cent large lymphocytes, 15 per cent small lymphocytes and 13 per cent mononuclear cells. Repeated urinalyses were normal except for the presence of bile. Urobilinogen was present. Bile was absent from the stool on admission but soon returned. The dextrose tolerance test on May 8th gave the readings as follows: 8 45 a.m., blood sugar 75 mg per hundred cubic centimeters, 9 15, 125 mg, 9 55, 143 mg, 10 45, 112 mg. The tests of hepatic function are given in table 1.<sup>7</sup> The Webster test performed by Dr E. S. Guzman Barron was negative.

The treatment consisted of rest in bed and a high carbohydrate, moderately high protein and low fat diet supplemented by the intravenous infusion of dextrose the patient receiving 1,500 cc of 10 per cent dextrose in distilled water or isotonic solution of sodium chloride intravenously on May 4, 6, 7, 8, 10, 11 and 12. His appetite continued good, enabling him to eat from 1,500 to 2,500 calories daily (approximately 400 Gm

From the Frank Billings Medical Clinic Department of Medicine University of Chicago.

<sup>1</sup> Voegtlin, Carl Hooper, Charles W. and Johnson J. M. Trinitrotoluene Poisoning—Its Nature, Diagnosis and Prevention. *Bull. 126 Hyg. Lab. U. S. P. H. S.* 1920.

<sup>2</sup> Roberts, Harry M. The TNT Health Hazard. *Brit. M. J.* 1: 647, 1941.

<sup>3</sup> Bedford, T. Preventive Work in Connection with TNT Poisoning. *Bull. War Med.* 2: 526 (July) 1942.

<sup>4</sup> Discussion on Trinitrotoluene Poisoning. *Proc. Roy. Soc. Med.* 35: 554, April 21, 1942.

<sup>5</sup> Evans, Robert M. TNT Jaundice. *Lancet* 2: 552, 1941.

<sup>6</sup> Special Discussion on the Origin, Symptoms, Pathology, Treatment, Prophylaxis of Toxic Jaundice Observed in Munition Workers. *Proc. Roy. Soc. Med.* 10: 106, 1917. von Ottingen, W. F. The Aromatic Amino and Nitro Compounds Their Toxicity and Potential Dangers. *Pub. Health Bull.* 271 Federal Security Agency, United States Public Health Service, 1941. Voegtlin, Hooper and Johnson.<sup>1</sup>

<sup>7</sup> Methods referred to in the tables.

a. Malloy, H. T. and Evelyn, K. V. Determination of Bilirubin with Photoelectric Colorimetry. *J. Biol. Chem.* 119: 481 (July) 1937.

b. Photoelectric Modification of Bloor-Saskett technique, whole blood, normal range cholesterol 140-200 mg. per hundred cubic centimeters, cholesterol ester 30-60 per cent.

c. Allen, J. G., Julian, O. C. and Dragstedt, L. R. The Use of Serial Dilutions in Determination of Prothrombin by the One Stage Technique. *Arch. Surg.* 11: 873 (Oct.) 1940.

d. Campbell, W. R. and Hanna, Marion I. The Albumin Globulins and Fibrinogen of Serum and Plasma. *J. Biol. Chem.* 119: 15 (June) 1937.

e. Quick, A. J. Intravenous Modification of the Hippuric Acid Test for Liver Function (normal value 0.9+). *Am. J. Digest. Dis.* 7: 616 (Dec.) 1939.

f. Hanks, B. M., Sprague, P. H. and Snell, A. M. Chemical Evaluation of the Galactose Tolerance Test. *J. A. M. A.* 100: 197 (June 14) 1933.

of carbohydrate, 100 Gm of protein and 20 Gm of fat) Twenty-five mg of synkayrite<sup>8</sup> was given intramuscularly on May 5

On May 8, at the suggestion of Dr E S Guzman Barron, 180 mg of cystine hydrochloride dissolved in 50 cc of isotonic solution of sodium chloride and neutralized with 0.5 normal sodium bicarbonate was given intravenously. Vitamin B was administered daily beginning on the twelfth day of hospitalization and crude liver extract daily beginning with the seventeenth day. The patient's condition had definitely improved, however, before either of the latter medications was given. The jaundice gradually subsided, and the tests of liver function returned to normal. The patient was discharged on June 5. He returned on June 28 for x-ray examinations, which disclosed a normal visualization of the gallbladder, after the administration of dye, without evidence of stone, and a normal esophagus, stomach, duodenal bulb, terminal ileum and colon.

decreased, as may be seen from the level of the serum bilirubin in table 2. The appetite returned rather rapidly, as did the patient's sense of well being. Treatment consisted of rest, a high carbohydrate moderately high protein and low fat diet (approximately 300 Gm of carbohydrate, 75 Gm of protein and 15 Gm of fat daily). No medication of any kind was prescribed. After the subsidence of the jaundice the gallbladder visualized normally roentgenologically.

The patient had been employed in an ordnance plant since January 1943. In January, February, May and June her only contact with explosives was the slight one occasioned by dealing with patients whose clothes were contaminated with explosives other than trinitrotoluene. In March, April and July she worked in a first aid room in which she came in contact with patients whose clothes were probably contaminated with mixtures of trinitrotoluene and ate two meals a day in a concrete bombshelter often crowded with these workers. The air in this

FIGURE 1—Laboratory Studies in Case 1

Date	Bilirubin <sup>4</sup>			Cholesterol <sup>1</sup>	Cholesterol Esters	Prothrombin <sup>5</sup>	Proteins <sup>1</sup>			Fibrinogen	Hippuric Acid Excretion <sup>6</sup> Gm	Galactose Tolerance <sup>7</sup> Gm
	Direct, Mg per 100 Cc	Indirect, Mg per 100 Cc	Per Cent				Total, Gm per 100 Cc	Albumin, Gm per 100 Cc	Globulin, Gm per 100 Cc			
5/1	21.0	25.2	91	160	20	170	6.48	3.71	2.77	0.38	0.11	7.0
5/7	19.5	26.0	73	115	16							
5/10						75.6					0.48	
5/11						100						
5/11	13.5	23.7	68	130	10	160	6.38	3.50	2.88	0.37		
5/12				160	20	160	7.3	3.70	3.6			
5/20	7.4	9.8	76	180	46		7.5	4.18	3.32	0.42	0.92	
5/25				190	60							
6/1	11	3.6	73	210	80		7.15	3.91	3.27			0.99
6/4												
6/8	11	1.8	61	130	50	85	6.77	4.44	2.33	0.31	0.82	
6/11	Normal	Normal		150	63						0.96	1.8
6/13				160	73	85	6.71	4.38	2.33		1.01	0.99

References to laboratory methods are given in footnote 7.

TABLE 2—Laboratory Studies in Case 2

Date	Bilirubin			Cholesterol	Cholesterol Esters	Prothrombin	Proteins			Fibrinogen	Hippuric Acid Excretion, Gm	Galactose Tolerance, Gm
	Direct, Mg per 100 Cc	Indirect, Mg per 100 Cc	Per Cent				Total, Gm per 100 Cc	Albumin, Gm per 100 Cc	Globulin, Gm per 100 Cc			
7/26	10.9	14.3	78	170	31	100%	6.24	4.66	1.58	0.27		
7/27												
7/28	14.0	17.0	82	170	10	100	5.29	4.43	0.86		0.5	2.86
7/31	17.0	21.8	91								0.31	
8/2	14.3	17.0	91									
8/3	11.4	16.9	79	210	38		6.01	4.49	1.52		0.5	2.17
8/4												
8/5	7.4	10.0	74									
8/7	5.9	8.1	73									
8/9	5.2	6.0	76	190	83	100	6.69	4.76	1.94		0.86	2.43
8/10												
8/12	3.8	4.6	83									
8/11	2.0	1.6	81									
8/13	1.92	1.52	80	180	88	95	6.91	5.22	1.69		1.25	

CASE 2—L, a woman aged 22, married, a nurse, entered the hospital on July 25, 1943 because of weakness, nausea, vomiting and jaundice. She dated the onset of her illness to six days before admission, when she noted that the scleras were tinged with yellow. On the second day her temperature rose to 99.4 F. On the morning of the third day nausea and vomiting appeared. There was no recurrence of the vomiting subsequently, but the tendency to nausea persisted. The jaundice progressively deepened.

The physical examination on admission disclosed normal findings except for a moderately intense icterus. The liver was palpable on deep inspiration 2 fingerbreadths below the costal border in the right midclavicular line. Its edge was sharp, its surface smooth, slightly tender. The urine on admission was strongly positive for urobilinogen and bile. The Wassermann and Kahn reactions were negative. The red blood cell count was 4.65 million with a hemoglobin of 13 Gm and a white cell count of 7,150. The patient remained in the hospital for twenty days, during which time the jaundice increased and then

bombshelter is known to contain the dust of trinitrotoluene. She had used two different types of "leg makeup," but there seems to be no reason to suspect these of causing the jaundice. The patient had always been well previously and had been in excellent health before the appearance of the jaundice, although for a month she had lost considerable sleep because of family worries.

CASE 3—B, a man aged 63, entered the hospital on June 9, 1943 listing the following complaints: fatigue, attacks of fainting and prostration, yellow finger nails, jaundice, belching, rumbling in the abdomen, flatus, nocturia, epigastric and umbilical pain, somnolence, swollen ankles, puffy eyes, cramping of the right hand and forearm, and a bad taste in the mouth. The patient had been employed as a sweeper and cleaner in a men's dressing room in an ordnance plant from Jan 17 to March 14, 1943. He came in contact with men wearing clothes contaminated with mixtures of explosives but was not directly exposed to the dust or fumes of trinitrotoluene during this period. On March 15 he changed jobs and for two months was exposed more or less continuously during his working hours to either the powder or the fumes of trinitrotoluene.

<sup>9</sup> The tetrasodium salt of the diphosphoric acid ester of 2-methyl-1, 3-naphthohydroquinone.



About two weeks after he changed jobs he noticed a slight fatigue, which persisted. This was not severe and did not interfere a great deal with his work. About one week after the onset of this fatigue he experienced an acute attack of fainting, dizziness and prostration. He was taken to the first aid station, where he quickly recovered and returned to work. A second such attack occurred some days later. A week or two after this a yellowish discoloration of the finger nails appeared and persisted. About four weeks prior to admission the patient experienced a third sudden attack of fainting with vomiting, but without nausea or pain. The physician at the first aid station remarked that the scleras were icteric and the skin of the body "pinker than normal" and sent the patient home. Apparently the local physician prescribed iron and vitamins. The patient could not tolerate the iron pills so they were stopped after one week. Daily intravenous infusions of dextrose were given for three weeks at home. During the four weeks at home the patient complained of belching, rumbling and gurgling in the abdomen and excessive amounts of flatus. There was no diarrhea, constipation or change in the color of the stool. A dull, gnawing epigastric pain appeared about three weeks prior to admission to the hospital. It was rather irregular in its appearance but frequently came one or two hours after eating, was relieved by eating and occasionally awakened him between 1 and 2 a m.

The physical examination on admission revealed slight icterus, with some yellow staining of the finger nails and a residual inflammation and pigmentation of the skin about the ankles

seen during almost the same period of time. 3 similar cases of jaundice occurring in civilians not known to have been exposed to any toxic substance and therefore presumed to be infectious in origin. In case 3, however, the clinical evidence incriminating trinitrotoluene seems conclusive. There was a history of rather heavy exposure for two months, the first symptoms, according to the patient, appeared about two weeks after the beginning of this exposure. The yellowish discoloration of the fingernails produced by the powder was observed, the "pink" color of the skin remarked on by the physician at the first aid station is suggestive of anilism, the anorexia, nausea, vomiting, epigastric and abdominal pain are characteristic of the so-called trinitrotoluene gastritis, the mild icterus with recorded abnormalities of hepatic function are, in our opinion, more suggestive of "toxic" than of infectious hepatitis. The failure to obtain a positive Webster test is not surprising. The absence of definite dermatitis or anilism in the first 2 cases is also not surprising for they have been absent in most of the instances of toxic necrosis of the liver hitherto reported.

We incline to the view that all 3 cases described were instances of trinitrotoluene poisoning with toxic necrosis of the liver of varying degrees. The severity of the

TABLE 3—Laboratory Studies in Case 3

Date	Bilirubin		Cholesterol	Cholesterol Esters	Prothrombin	Proteins			Fibrinogen	Hippuric Acid Excretion Gm	Galactose Tolerance Gm
	Direct Mg per 100 Cc	Indirect Mg per 100 Cc				Total Gm per 100 Cc	Albumin Gm per 100 Cc	Globulin Gm per 100 Cc			
8/9	2.1	3.0	215	60	100%	5.03	3.0	2.03	0.25	0.20	
8/16	1.16	1.54	170	51		5.06	2.40	2.66		0.1	
8/22	Normal	1.4	150	53	00	5.81	2.66	3.15	0.27	0.53	3.7
7/28	Normal	Normal			73	5.78	4.07	1.71			
7/27	Normal	Normal	180	85	73					1.00	0.5
7/29					07						
9/7	Normal	Normal	190	105	91	5.78	3.27	2.51		0.10*	2.50

\* Small urine volume—incomplete collection? Patient clinically well

which the patient stated he had had for some time. On deep inspiration the liver was palpable a good fingerbreadth below the costal border in the right midclavicular line. The edge was sharp, the surface smooth and not tender. The spleen was not palpated. The Webster test performed on the urine and on bits of tissue scraped from around the finger nails was negative. The urinalysis was normal. The red blood cell count was 4.75 million with a hemoglobin of 14 Gm and a white cell count of 8,100. The patient remained in the hospital for nineteen days during which time his course was rather uneventful. The listlessness disappeared slowly, as did the slight icterus. The tests of hepatic function and other laboratory procedures are shown in table 3. Treatment consisted of a high carbohydrate, moderately high protein, low fat diet (carbohydrate 400 Gm, protein 100 Gm, and fat 30 Gm) plus the administration of multiple vitamins. Initial x-ray examinations disclosed a nonvisualization of the gallbladder and suggested also a deformity of the duodenal bulb. However, on subsequent examinations the esophagus, stomach and duodenum were found to be normal and a faint but presumably normal visualization of the gallbladder was obtained. At the time of the patient's discharge from the hospital he was entirely free of jaundice and felt quite well.

## COMMENT

The diagnosis of trinitrotoluene poisoning in these cases is based primarily on circumstantial evidence, jaundice of the parenchymal type occurring in persons exposed to trinitrotoluene compounds. In case 1 the exposure was considerable, in case 2 relatively slight and in case 3 rather great. Cases 1 and 2 were on the whole indistinguishable from acute catarrhal jaundice, indeed, the possibility that they were in fact infectious jaundice cannot be denied. One of us (W. L. P.) has

hepatic injury in the 3 cases is evident from the intensity and duration of the jaundice and is indicated further by the percentage of cholesterol esters, the prothrombin and the excretion of hippuric acid and galactose.

Although recovery might have occurred without any of the treatment employed, we nevertheless believe that the accumulated experimental and clinical evidence in favor of a high carbohydrate, moderately high protein and low fat diet to be sufficiently great to strongly justify its use.<sup>9</sup> It is not possible to know whether the cystine hydrochloride suggested by Dr. Barron<sup>10</sup> on theoretical grounds and given in case 1 was of any value or not. The second patient recovered without it, but she was not as sick, and hepatic injury as judged by the tests of function, was much less pronounced.

## SUMMARY

In 3 cases of apparent trinitrotoluene poisoning with recovery, the evidence suggests that the toxic necrosis of the liver was severe in one, moderate in the second, and slight to moderate in the third.

A residual pigmentation and inflammation of the skin of the ankles was noted in the third patient in addition to the jaundice, anilism and gastrointestinal symptoms characteristic of trinitrotoluene intoxication.

9. Ravdin I. S., Thurogood, Elizabeth, Riegel, Cecilia, Peters, Rozanne, and Rhoads J. E. The Prevention of Liver Damage and the Facilitation of Repair in the Liver by Diet. *J. A. M. A.* 121: 322 (Jan 30) 1943.  
10. Barron E. S., Guzman and Singer T. P. Enzyme Systems Containing Active Sulfhydryl Groups. The Role of Glutathione. *Science* 97: 356 1943.

# MAGNESIUM POISONING FOLLOWING AN ENEMA OF EPSOM SALT SOLUTION

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Poisoning due either to abuse or to idiosyncrasy is to be expected with any drug which is widely used by both practitioners and laymen. Epsom salt is one of the most commonly employed household purgatives. In spite of its general use, reports of poisonous effects from magnesium sulfate are not numerous.

Charles Fraser<sup>1</sup> in 1909 reviewed the literature of the period from 1841 to the time of his publication and was able to collect only 7 cases. Two of these had as prominent features nausea, vomiting, abdominal pain and distention. The 2 patients showed little or no central depression and recovered in two or three days. William Boos<sup>2</sup> in 1911 added 3 more cases of poisoning from magnesium sulfate with one death. In one of these there were vomiting and obstipation. In the others the toxic effects were due to a cumulative effect of repeated doses rather than to rapid absorption of a single dose. F. E. Byron<sup>3</sup> in 1939 reported 5 cases of fatal poisoning following administration of magnesium sulfate solution. The patients were children between 2½ and 10 years of age who were being treated for intestinal helminthiasis and all died within two hours. In 18 cases of poisoning by magnesium sulfate collected from the literature the illness followed oral administration of the salt. As far as we have been able to determine, toxic effects following rectal instillation of a solution of magnesium sulfate have not hitherto been reported. Following are our 2 cases of flaccid paralysis and coma coming on rapidly after an enema containing epsom salt solution. In the first case magnesium intoxication was not considered until after the patient had died, hence no confirming laboratory data are available. Although the final diagnosis of magnesium poisoning was not proved we have no hesitation in presenting it, as the circumstantial evidence is as great as for any of the fatal cases reported in the literature. Moreover, it was our knowledge of the first case which later made us alert to the possibility of magnesium poisoning in the second instance, in which we were able to verify the diagnosis and avert a fatality by administering the specific antidote.

## REPORT OF CASES

CASE 1—J. B., a 2 year old boy, was admitted for a plastic operation for imperforate anus. When 10 hours old he had undergone colostomy. The new stoma functioned well for seven months. A stricture then developed for which he had to have an operation. At the present admission he was well developed and nourished, with physical findings normal for his age. One week after entry an abdominoperineal plastic operation was carried out to correct the congenital anomaly. Post-

operatively pyelonephritis developed, which responded to chemotherapy, and his progress was considered satisfactory. Two months after the operation fecal impaction developed, and the impacted fecal matter was broken up by digital manipulation. Following this he was given an enema containing epsom salt solution. This was expelled, with good results. Almost immediately thereafter the patient became limp and stopped breathing. Artificial respiration and oxygen therapy were begun at once, and he received 0.5 cc of methamphetamine intramuscularly. Respirations were resumed at 28 per minute but remained shallow, irregular and entirely abdominal. The pulse rate was 130. The baby was comatose, the pupillary reflexes were absent and there was generalized flaccid paralysis. In spite of vigorous supportive measures, including intravenous injection of fluids and blood transfusion, he died a few hours later of respiratory failure. Autopsy including examination of the brain failed to reveal the cause of death.

CASE 2—P. M., an Italian woman aged 23, single, was admitted to the emergency ward of the Massachusetts General Hospital complaining of severe cramping in the left flank and in the left lower abdominal quadrant of forty-eight hours' duration, associated with nausea and vomiting. The past history was irrelevant except for an equivocal history of rheumatic fever at the age of 15 years. On admission the physical examination gave essentially normal results except for minimal tenderness in the left flank and the left costovertebral angle. The white blood cell count was 11,000. Urinary sediment contained 50 red blood cells per high power field. A diagnosis of left ureteral calculus was made and confirmed by x-ray examination, which revealed a 0.3 cm stone in the region of the intramural portion of the left ureter. The patient was given forced fluids and atropine sulfate preoperatively, ½ mg (0.43 mg), every three hours until midnight. In preparation for an intravenous pyelogram, all fluids were withheld after midnight. The following morning the patient received one ampule of prostigmine methylsulfate 1,200 followed in fifteen minutes by a small "MGW enema." This enema mixture, formerly in daily use in this hospital, ordinarily consists of 2 ounces (60 cc) of glycerin, 2 ounces of water and 2 ounces of a saturated solution of magnesium sulfate (1½ ounces [45 cc] of the solution containing 1 ounce [28 Gm] of the salt). In this instance the patient received at 6 a.m. a four ounce (120 cc) enema containing 40 cc each of the three ingredients. The full enema was retained for only two minutes. She then passed considerable fluid and a small amount of feces. Ten minutes later she had a large fluid movement and again in ten minutes a third movement, this time mostly clear fluid. On being helped from the bed pan at about 6:30 a.m. she complained to the nurse that she "felt hot all over" and was "very thirsty." At 7:15 a.m. she was found to be unresponsive, although on strong auditory and painful stimuli she could make a sound and moved her tongue as if to speak. Her systolic blood pressure was 150. The pulse was of good quality and not rapid. Her respirations were shallow and entirely abdominal. The pupils were dilated and reacted only slightly to light. Her limbs were flaccid, and there was complete loss of all the reflexes, including the corneal. There was incontinence of feces but not of urine. Respirations grew progressively more shallow, and finally no painful stimulus would evoke a response. When first seen she appeared to have lost motor power without complete loss of consciousness. Recalling that parenteral magnesium produces a curare like effect on the peripheral neuromuscular apparatus, it was thought that the patient might be suffering from magnesium poisoning. The central depression produced by the magnesium ion is known to be completely antagonized by calcium effect. Therefore 1 Gm of calcium gluconate was given intravenously while the patient was being moved into a room in which there was a respirator. In less than ten minutes there was an obvious improvement in her general condition. She was able to move her head, and her respirations improved so that a respirator was not needed. At this time, about 9 a.m., venous blood was taken for a serum magnesium determination. Another gram of calcium gluconate was given, and within ten minutes thereafter she was fully conscious and asking for water. By questioning it was found that she had been aware of what was

From the Massachusetts General Hospital

The determinations of serum magnesium were made by Miss Dorothy M. Tibbetts of the Collis P. Huntington Memorial Hospital. Dr. J. C. Aub and Miss Tibbetts placed at our disposal some unpublished data on the absorption of magnesium in nephritic patients.

1. Fraser, Charles. Epsom Salts as a Poison, *Lancet* 1: 1174, 1909.
2. Boos, W. T. Magnesium Poisoning. A Study of Ten Cases, *J. A. M. A.* 55: 2037 (Dec 10) 1910.
3. Priestley, J. P. Toxic Effects of Magnesium Sulphate, *New York M. J.* 96: 665, 1912.
3. Byron, F. E. Fatal Results Following the Administration of Magnesium Sulphate, *J. Malaya Br., Brit. M. A.* 3: 100, 1939.

going on around her for some time after she had been unable to move. Her most vivid recollections of the period immediately preceding her loss of consciousness were those of extreme thirst and a feeling of heat. Interestingly enough, her corneal reflex did not reappear until two or three hours later. Having passed the ureteral stone (as determined by subsequent x-ray examination) and being asymptomatic the patient was discharged three days later.

In addition to the dramatic response to calcium, the laboratory findings confirmed the diagnosis of magnesium poisoning. The serum magnesium content of the first sample of blood, drawn approximately three hours after the enema, was 20.8 mg per hundred cubic centimeters. Magnesium was determined by the colorimetric method of Fiske and Logan<sup>4</sup>. The serum calcium was 9.9 mg per hundred cubic centimeters. A second sample of blood drawn later and analyzed by a different laboratory was reported to contain 15.4 mg of magnesium and 11.2 mg of calcium per hundred cubic centimeters of serum. A catheter specimen of 300 cc of clear amber urine was obtained from the patient early in her period of unconsciousness. The magnesium content of this sample was 0.72 mg per cubic centimeter. Soon after regaining consciousness she voided 46 cc of urine containing 2.38 mg of magnesium per cubic centimeter and 2.52 mg of calcium. Hence the patient excreted about 196 mg of magnesium in three hours. Through an oversight the specific gravity of this urine was not determined. This measurement would have been of great interest, as some of the highest values for specific gravity recorded have been obtained in cases of magnesium poisoning.

At the present time, magnesium sulfate solution is seldom administered by rectum except for its osmotic effects. It is occasionally used in the treatment of neurosurgical patients with acute cerebral edema to produce rapid dehydration. It is commonly employed in combination with glycerin and water as a cleansing enema. Contrary to the general belief that magnesium is not absorbed from such an enema, the cases reported here establish that in certain persons absorption may occur and toxic effects ensue even when epsom salt solution is administered by rectum. The high serum magnesium level in case 2 proves that the toxic effects were not the result of abnormal sensitivity to the magnesium ion but were due rather to a peculiarity of the intestinal tract which permitted rapid absorption of the salt from the rectum and colon.

Sensations of internal heat and thirst are probably valuable premonitory signs of impending magnesium poisoning.

Eight of the persons reported as showing magnesium poisoning have been children between the ages of 2½ and 10 years. Six of these died in ten to one hundred and twenty minutes after taking a solution of epsom salt. The large percentage of the total number with fatal poisoning who were children suggests that overwhelmingly rapid absorption of magnesium salts may be more common in children than in adults or that intestines infested with worms may be particularly permeable to these salts.

#### SUMMARY

Toxic effects followed rectal instillation of a solution of magnesium sulfate.

There is a group of patients whose intestines are peculiarly permeable to magnesium salts. In regard to these otherwise normal persons, toxic effects from

magnesium sulfate cannot be predicted, but if they are recognized promptly a fatal outcome can be entirely prevented by intravenous administration of calcium.

Complaints of severe thirst and of "feeling hot all over" or the like by a patient who has been given magnesium in any form should be taken as a premonitory sign of impending magnesium poisoning in order that the administration of calcium may be instituted as soon as possible.

## REPORT OF REEXAMINATION OF 4,994 MEN DISQUALIFIED FOR GENERAL MILITARY SERVICE

BECAUSE OF THE DIAGNOSIS OF CARDIOVASCULAR DEFECTS

A COMBINED STUDY MADE BY SPECIAL MEDICAL ADVISORY BOARDS IN BOSTON, CHICAGO, NEW YORK, PHILADELPHIA AND SAN FRANCISCO

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(Continued from page 944)

The more important results of reexamination of men originally disqualified for general military service require special comment here.

#### A RECLASSIFICATION AS 1A<sup>1</sup>

(a) *General Figures, Comparisons with Introduction and Borderline Cases*—The total number of men resubmitted as 1A among the 4,994 statistically studied in the five cities was 863, or 17.3 per cent, which includes 103 of the borderline cases already referred to (section 5). If these borderline cases were omitted, the number would be considerably reduced, to 760, or 15.2 per cent.

Chicago gave the smallest return of 1A cases resubmitted for military service (only 3.8 per cent) as the result of the procedure developed in that city in the original examinations, whereby cardiovascular experts had been freely used in the decision about doubtful cases. It would appear, therefore, at the outset that Chicago's example might profitably be followed by other examining groups throughout the country.

Boston, New York and Philadelphia turned in very similar figures for acceptance and rejection, respectively 18.8, 19.2 and 16.5 per cent and 81.2, 80.8 and 83.5 per cent. San Francisco gave a higher percentage of 1A men (28.6 per cent), in some degree, at least, as the result of acceptance of more borderline cases recorded as such (see section 5).

(b) *Original Rejection Diagnoses of the Cases Reclassified as 1A* (table 2)—Valvular heart disease was by far the commonest diagnosis found on the records of the men reclassified as 1A, having been the original rejection diagnosis in 299 of the 589 cases reclassified as 1A in four of the five cities: in 79 (41.4 per cent) of the 188 resubmitted cases in Boston, in 14 (36.8 per cent) of the 38 resubmitted cases in Chicago, in 109 (36.7 per cent) of the 192 1A cases in New York and in 97 (58.7 per cent) of the 165 cases in

<sup>4</sup> Fiske, C. H. and Logan, M. A., in Folin, Otto, *Laboratory Manual of Biological Chemistry*, ed. 5, New York: D. Appleton Century Company, Inc., 1934.

<sup>7</sup> See tables 1, 2 and 4.

Philadelphia Hypertension as the original diagnosis ranked second with 133 of the 589 resubmitted cases in 52 of the resubmitted cases in Boston, in 5 of the 38 cases in Chicago, in 43 (22.4 per cent) in New York and in 33 in Philadelphia. Tachycardia as a specific entity ranked third with 51 of the 589 resubmitted cases: 2 in Boston, 8 in Chicago, 27 (14.1 per cent) in New York and 14 in Philadelphia. Other diagnoses in approximately the order of their occurrence in the 1A group were heart disease unspecified, neurocirculatory asthenia and cardiac enlargement.

Thus it is evident that the three findings that had bothered the original examiners and had resulted in the rejection of these men were murmurs, usually a systolic blow at the apex, elevated blood pressure and increased heart rate. All of these were either not found in the reexamination or subsided on resting quietly one-half hour recumbent or were interpreted as non-pathologic and hence unimportant. However, there were in all five cities cases of these three types that were considered as probably but not certainly normal (table 4), some having been accepted for resubmission in Chicago, New York and Philadelphia and all having been lumped together in the borderline group in Boston and rejected. More of the 114 cases in the Boston group had been originally diagnosed hypertension (46) than valvular disease (30), neurocirculatory asthenia (15), heart disease unspecified (12) or tachycardia (6). The final rearrangement of possible diagnoses in the Boston borderline group was hypertension ("nervous") 70, tachycardia ("nervous") 27, doubtful valvular disease 19, doubtful cardiac enlargement 10 and miscellaneous 7.

#### B REJECTION CONFIRMED

(a) *General Figures and Comparison*—The great majority of all the 4,994 cases, actually 4,131, or 82.7 per cent, were confirmed in their rejection. In Chicago over 95 per cent (actually 96.2 per cent) were rejected, strongly endorsing the work of the Chicago induction station and local boards. In Boston, New York and Philadelphia the rejections were confirmed in a little over 80 per cent and in San Francisco the figure was 71.4 per cent.

As stated earlier in the comment, the rejections were confirmed as would be expected, more often in the cases of the men examined by the induction stations than in those examined by the local boards, in the ratio of about 2 to 1 as calculated in Boston, New York and San Francisco.

(b) *Details of Rejection Diagnoses* (table 3)—The commonest cause for rejection in all five cities was valvular disease, that is, essentially, rheumatic heart disease. It was diagnosed in 2,476 (59.9 per cent) of the 4,131 rejected cases, or 50 per cent of the entire lot of 4,994 men. The greatest number of rheumatic heart rejectees (both absolutely and relatively) was found in the third decade of life. Negroes as well as white men were commonly affected: 63.9 per cent of the rejected white men and 63.8 per cent of the rejected Negroes in four of the five cities. Five of the 6 rejected Chinese and all 4 of the rejected Filipinos in four cities had rheumatic heart disease (table 8).

There was some variation in the incidence of rheumatic valvular disease in the different cities. This diagnosis was recorded in 415 cases (51.1 per cent) in Boston, in 676 cases (70.3 per cent) in Chicago, in 545 cases (67.4 per cent) in New York, in 569 cases (65.9 per cent) in Philadelphia and in 271 cases (39.6 per cent) in San Francisco, which showed much the lowest incidence.

The valves involved and their lesions were, as one might expect, mitral first, being diagnosed alone in 1,500 cases in the five cities (stenosis in 750 cases and regurgitation without obvious stenosis in the 750 others), aortic and mitral combined second, reported in 628 cases in these same cities, and aortic alone in 280 (stenosis in 72 and regurgitation without obvious stenosis in the 208 others) (table 5). There was, however, great individual variation in the several cities, depending doubtless in large part on the interpretation of the murmurs, thus the greatest difference was found between Boston and Philadelphia, where mitral regurgitation and stenosis without aortic valvular disease were diagnosed in 58 and 101 cases respectively in the former, and in 300 and 131 respectively in the latter, and aortic regurgitation and stenosis without mitral valvular disease were diagnosed in 53 and 18 cases respectively in the former and in but 4 and no cases respectively in the latter, although there were a number of cases of aortic stenosis combined with mitral valvular disease in Philadelphia. It would seem that the diagnosis of uncomplicated mitral valvular disease, especially regurgitation, was made much more often in Philadelphia than in Boston, whereas the order was reversed with respect to the diagnosis of uncomplicated aortic valvular disease.

A history of rheumatic fever was obtained in slightly over a fourth of all the cases of rheumatic heart disease, 28.8 per cent in four of the cities (table 6), and in nearly half of those in Boston and New York. A history of chorea was rare (1.8 per cent of the rheumatic heart cases in these same four cities).

Auricular fibrillation complicating rheumatic (mitral) valvular disease was relatively uncommon, being found in only 24 (2.5 per cent) of the 960 rheumatic cases in Boston and New York, but auricular fibrillation of non-rheumatic origin was rarer still, being noted in only 4 of the 2,000 Boston and New York cases (0.2 per cent).

Syphilis as a cause of aortic valvular disease or of aortitis, definite or suspected, was very rare, having been diagnosed by the special advisory boards in only 17 cases of the 4,131 rejected (0.4 per cent), in 5 of the 17 cases aortic regurgitation was found, in 7 aortitis without aortic regurgitation and in 5 the lesion was not specified. Seven of the 17 cases were in New York and all in Negroes (table 8), all of the 5 Chicago cases were in white men, 2 of the 3 cases in Philadelphia were in Negroes, no syphilitic cases were found in Boston, where only 23 Negroes were examined, in contrast to the 90 Negroes in New York and 207 in Philadelphia.

The second most common cause for rejection was arterial hypertension, diagnosed in 1,059 (25.6 per cent) of the 4,131 finally rejected men, or 21 per cent of the total of 4,994 men reexamined. The incidence was strikingly similar in four of the five cities, there having been 249 cases in Boston, 239 in Chicago, 200 in Philadelphia and 212 in San Francisco, why there were fewer in New York (159) is not clear. Separation into systolic, diastolic and both systolic and diastolic was not carried out universally, but as a rule the elevation of pressure involved both systolic and diastolic levels, in Boston, for example, of the 249 cases both levels were elevated in 146, the systolic alone in 80 and the diastolic alone in 23. A few men with systolic hypertension (level of systolic pressure up to 160 or 170 mm. but with diastolic pressure not over 90 mm.) were accepted for resubmission in the various cities or

were included in the borderline group in Boston, no men with diastolic hypertension were so accepted. Negroes were more often rejected than white men for hypertension, for example, 12 of the 23 Negroes (52 per cent) compared to 25 per cent for the white men reexamined in Boston, 26 per cent compared to 18 per cent in Philadelphia, and 20 per cent compared to 16 per cent in New York.

All the other causes for final rejection, aside from rheumatic heart disease and hypertension, amounted to only 596 cases, or 14 per cent of the 4131 cases finally rejected, or 12 per cent of the entire group of 4,994.

The third most common cause for final rejection was neurocirculatory asthenia, with 204 cases (4.9 per cent of those finally rejected, or 4.0 per cent of the total of 4,994 cases). The numbers varied from the maximum

of 78 in Boston to the minimum of 11 in Chicago, there were 31 in New York, 54 in Philadelphia and 30 in San Francisco, where an additional group of 6 men were rejected for cardiac neurosis, 5 men in Boston were also rejected for cardiac neurosis. Negroes were rarely affected, there being only 3 so diagnosed in four of the five cities out of 174 cases rejected for that condition and out of a total of 340 Negroes rejected (table 8). The diagnosis requires an evaluation of symptoms rather than signs, and doubtless for that reason more correction was required in the case of neurocirculatory asthenia than for other diagnoses. There was a tendency to overdiagnose it originally when there was apparently only tachycardia, or to underdiagnose a far more important fundamental condition as tachycardia.

The fourth most common cause for final rejection, and probably the most debatable of all, was simple tachycardia diagnosed in 189 cases or 4.6 per cent of the 4F cases and 3.8 per cent of the entire group of 4,994 men. It ranged in incidence in the rejected group from a high of 75 cases in Chicago to a low of 8 cases in Philadelphia, there were 32 in Boston, 48 in New York and 26 in San Francisco. A number of cases (27) of slight "nervous" tachycardia with rates of over 100 and up to 120 and nothing else abnormal, were put in the 'borderline' group in Boston.

The fifth most common cause for final rejection was congenital heart disease (table 7) with 183 equaling 4.4 per cent of the 4F cases and 3.7 per cent of the total of 4,994. The incidence varied from the highest (63 cases) in San Francisco to the lowest (18 cases) in Philadelphia, there were 45 in Boston, 28 in Chicago, and 29 in New York. Over a third of all the cases (73) were diagnosed as ventricular septal defect (Roger's

disease). The second most common lesion was patency of the ductus arteriosus with 29 cases, the third was pulmonic stenosis (15 cases, 2 of which were diagnosed specifically the tetralogy of Fallot), the fourth, coarctation of the aorta (14 cases), the fifth auricular septal defect (6 cases), and the sixth subaortic stenosis (5 cases). Four men were thought to have both patent ductus arteriosus and ventricular septal defect. One man with dextrocardia, hypertension and cardiac enlargement was rejected in New York, another with simple dextrocardia was passed as 1A in Boston. In a number of instances no specific defects could be identified but congenital heart disease seemed undoubted.

No other cause for final rejection besides the five mentioned totaled as many as 100 men. Cardiac enlargement alone that was unexplained and discovered usually only by x-ray film amounted to 76 cases, ranging from 26 in San Francisco to 9 in Chicago and Philadelphia, in which city 36 other instances of "x-ray enlargement" according to the Hodges-Eyster standard, were considered after careful study to be normal hearts. Twenty men were rejected on this basis alone in New York. Several such dubious but probably normal cases (10) were put into the 'borderline' group in Boston, and comments by the examiners in San Francisco, where the highest number was rejected, expressed dissatisfaction with the criteria. (See figures 2 to 5 for illustrative x-ray examples.)

Arrhythmia was the cause for final rejection in 32 cases (less than 1 per cent) throughout the five cities, including 17 instances of paroxysmal tachycardia, 6 of uncomplicated auricular fibrillation, 2 of flutter and 5 of auriculoventricular heart block. Ten cases were diagnosed bundle branch block by electrocardiogram.

Electrocardiographic abnormalities alone were the cause for rejection in another 32 cases, with evidently a considerable variation in the interpretation of moot or borderline findings in the various cities, as shown in the tables. This variation is further evidence revealing the need for more adequate knowledge than any one possesses at present of the range of the normal electrocardiogram. (See figures 6 to 9 for illustrative electrocardiograms.)

Cardiovascular (aortic) syphilis was diagnosed in only 17 cases (0.4 per cent) of those finally rejected. This condition has already been taken up following the discussion of rheumatic heart disease above.

Hygromyositis as a cause of tachycardia or of other symptoms and signs was diagnosed in 14 cases, recent rheumatic fever (that is, authenticated attacks within the last five years) in 13 cases, cardiac strain from chest deformities in 10, coronary heart disease in only 6 (with a record of myocardial



Fig 2—Thorax showing heart shadow beyond the normal in size according to the Hodges-Eyster calculations based on height and weight but apparently normal for this man's build (very wide chest). In this type of build it seems probable that the cardiothoracic ratio may be more suitable as a standard than the Hodges-Eyster figures based on height and weight (height 66 inches [167 cm], weight 127 pounds [58 Kg]), which according to the Hodges-Eyster calculations give an expected transverse diameter of 12.3 cm. 1 cm added to this equals 13.2 cm. The actual width of the heart is 13.8 cm and the internal diameter of the thorax 30.5 cm. The cardiothoracic ratio =  $13.8 \div 30.5 = 45$  per cent.



Fig 3—Thorax of a fat man (weight 222½ pounds [101 kg], height 68 inches [173 cm]) without coat shirt or shoes. This film shows a large triangle of fat at the pericardiodiaphragmatic angle which increases the heart shadow by at least 2.5 cm. and perhaps more, leaving the transverse diameter of the heart 15.5 cm. which is well within the normal limits both by the Hodges-Eyster tables and by the cardiothoracic ratio.



infarction in 3 of them), pericarditis in 4, peripheral vascular defects in only 3 cases and unspecified heart disease in 113 more

(c) *Changes in Diagnosis in the Finally Rejected Group* (table 9)—Not only were the original diagnoses changed in the case of the men resubmitted for

military service, but not infrequently the reexamination resulted in a relabeling of the diagnoses in the case of the men whose rejection was confirmed. The majority of the changes were quite unimportant, consisting simply of the addition of data to diagnoses already adequate for rejection, for example, "mitral stenosis" to the simple diagnosis of "rheumatic heart disease" or "aortic regurgitation" to the correct but incomplete diagnosis of "mitral valvular disease."

On occasion, however, important corrections were made as in the case of the diagnosis of "heart disease" changed to "neurocirculatory asthenia," "neurocirculatory asthenia" changed to "tachycardia," "rheumatic heart disease" to "congenital heart disease" or "hypertension" or vice versa, "mitral regurgitation" to "aortic stenosis," "pericardial effusion" to "markedly enlarged rheumatic heart" and "patency of the ductus arteriosus" to "ventricular septal defect."

The most common disagreement universally was in the diagnosis of rheumatic heart disease, the next in that of hypertension, the third in that of tachycardia and the fourth in that of neurocirculatory asthenia. Without doubt the greater amount of time and the quieter environment aided as much or more in the correction of diagnosis as did the greater experience of the

specialists themselves. Furthermore, it should be stated that the changes in diagnosis were sometimes only provisional or questionable and that the specialists themselves were in a quandary about at least a few of the diagnoses, especially congenital heart disease

7 *Race* (table 8)—In the early part of the discussion under section 3, Men Reexamined, mention was made of the higher incidence of the confirmed rejection of Negroes, Chinese and Filipinos than of white men. In four of the five cities all 6 Chinese and all 4 Filipinos were again rejected and 340 (88 per cent) of the 386 Negroes. Cardiovascular syphilis had a far higher, and hypertension a somewhat higher, incidence among the Negroes than among the white men, rheumatic heart disease about the same, and neurocirculatory asthenia a much lower incidence.

8 *Status in Civilian Life of Men Whose Rejection Has Been Confirmed*—It was the general rule to find that the men reexamined who showed heart disease, hypertension or other cardiovascular abnormalities were engaged in occupations suited to their conditions and exposed to adequate medical advice by private physicians or hospital clinics. Rarely was it found necessary to urge a visit to a doctor or to suggest any change in occupation or therapy. The advice to "carry on" was the order of the day. Almost all the men were engaged in useful occupations despite their heart trouble, but the majority expressed a strong desire to be accepted for military service, very few were unable to work at all.

9 *Problems*—There were eight outstanding problems in cardiovascular examination for military service revealed by this study. They will be discussed in the order of their frequency and importance.

(a) *Systolic Murmurs at the Cardiac Apex*—These were commonly found both in health and in disease according to the opinion of the special examining boards in all five cities. It was generally agreed that very slight to slight systolic murmurs at the cardiac apex, little or not at all transmitted to the axilla especially if late in timing and in the absence of any evidence of cardiac enlargement, diastolic murmurs, or a history of rheumatic fever, should be considered as within the normal range, particularly if they varied greatly, sometimes to the point of disappearance, with change in body position or respiratory phase. However, there lacked complete agreement, not only between the different cities but also between the examiners in any given city, both as to the intensity of the murmurs and as to their significance. A follow-up study of the cases that were resubmitted despite the presence of apical systolic murmurs and of the Boston "borderline" group should prove of great importance in a final appraisal of such murmurs. All moderately loud or loud apical systolic murmurs were uniformly a cause for rejection.

The importance of other heart murmurs was less difficult to assess. Aortic systolic murmurs of slight degree, comparable to those acceptable at the apex, were few in number, the louder murmurs being indicative of aortic stenosis in nearly every case. Slight left lower



FIG. 4—Normal heart vertical in position with prominence of the pulmonary arc and hilar shadows giving a straight left upper border of the heart shadow. This contour of the left upper border of the heart shadow, sometimes in more exaggerated degree may simulate the so-called mitral shape but is due to the position of the heart. Transverse diameter of the heart = 13.0 cm. Expected transverse diameter by Hodges-Eyster calculations = 12.8 cm at a height of 68 inches (173 cm) and a weight of 145½ pounds (66 kg).



FIG. 5—Thorax showing the shadow of the heart displaced considerably to the left by depression of the sternum. The right border cannot definitely be made out and doubtless underlies the sternum. No evidence of heart disease was found in this person.

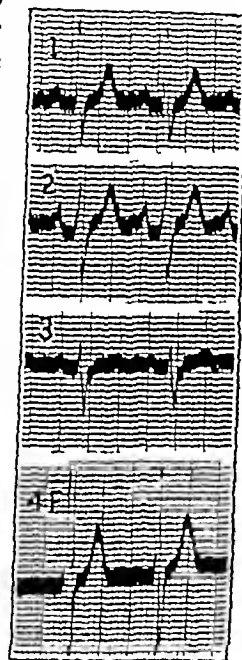


FIG. 6—White man aged 22. No rheumatic history. Said to have had murmur since the age of 6. Examination showed inconstant systolic blow at apex. X-ray examination revealed no enlargement of the heart. An electrocardiogram disclosed incomplete bundle branch block with QRS of 0.12 second. Was not resubmitted.

sternal border murmurs of uncertain origin were also few in number. Pulmonary systolic murmurs were almost universal in the supine position and on expiration, and only when they were loud and persistent were they a cause for rejection. Extracardiac scratchy to and fro murmurs varying greatly with respiration were occasionally encountered in normal persons, and an interesting "normal" variation was the extra sound in systole, the "systolic click," which had at times been a cause for original rejection.

(b) *Blood Pressure Levels*—A close second to the problem of the apical systolic murmur was that of the upper levels of the normal blood pressure. Although in general the present limits as given in MR 1-9 of 150 mm for the systolic and 90 mm for the diastolic are satisfactory for the majority of young men at rest, there may be exceptions, and an unusually nervous or excited person can conceivably have a normal systolic blood pressure up to 160 or even 170 mm under the conditions of the examination and perhaps a diastolic blood pressure up to 95 mm, although that is more doubtful. A relatively high pulse pressure was not uncommon in the reexamination, especially when the subject had recently taken a good deal of liquor. The more obviously nervous, mild hypertension was attended as a rule by a nervous tachycardia. Elevation of the blood pressure with a heart rate of average or low frequency is probably more serious. A follow-up study of these particular borderline cases should yield valuable information.

(c) *Heart Rate*—The heart rate was considered much less of a problem by the special advisory boards in the five cities than were the apical systolic murmur and the blood pressure or, in fact than it was apparently considered by the local boards and induction stations. The figure of 100 per minute was the criterion followed in most instances but it has been the general opinion of all the five groups that heart rates of 110 or indeed even 120 should be acceptable, under the conditions of the examination, if there is no evidence of heart disease, febrile illness, thyrotoxicosis or other physical ailment responsible for the tachycardia, or of other rejectable conditions, such as neurocirculatory asthenia, for example. Artificial elevation of the pulse rate by the use of drugs has probably been but little resorted to by the registrants for the draft, that was considered in this reexamination but only rarely suspected. It is known that the normal heart rate in outstanding athletes at rest or relative rest can vary from 35 to 120 per minute, and so it is evident that heart rate is one of the poorest criteria of cardiovascular fitness.

(d) *X-Ray and Heart Size*—One of the most difficult cardiovascular problems of today is the determination of the normal heart size and shape by any method of examination including x-ray study, and the present investigation may yield its quota of information in the solution of this problem by careful follow-up studies, both of those who were accepted despite full heart size, that is with measurements at the upper range of size agreed on, those put into the "borderline" group because x-ray measurement alone just failed to fit the so called normal criteria, and those who were flatly rejected because the measurement slightly exceeded the upper range agreed to. The standard for the upper normal limit used in the reexamination was 1 cm greater than that of the transverse diameter calculated by the Hodges-Evster formula, but it seemed to many of the examiners that this measurement was

madequate. In Boston, for example, several men were examined who seemed perfectly normal in every other way except for transverse heart diameters in the teleroentgenogram (2 meter film) a little (up to 1 cm) more than the upper limit set, these men tended to be of unusual stature, rather short and with wide chests and shoulders, which resulted in perfectly normal "cardiothoracic ratios" (transverse diameter of heart not over 50 per cent of the internal diameter of the thorax). It was evident that height and weight alone do not properly indicate important variations in normal body build and that no criteria as yet introduced adequately cover the range of size of the normal heart.

(e) *Electrocardiography*—The same difficulty exists with respect to the electrocardiogram as in the case of the x-ray heart shadow. We do not yet know the full range of the normal, and so there were men reexamined in all the cities whose electrocardiographic

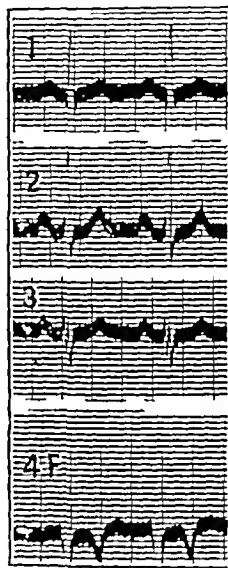


Fig 7—Negro aged 23. No rheumatic history. No symptoms. Systolic murmur at apex regarded as cardiorespiratory. X-ray examination revealed no cardiac enlargement. Electrocardiogram showed sharply inverted T<sub>4</sub> with Q<sub>4</sub> of 3 mm. Final diagnosis heart disease type unspecified. Was not re-submitted.

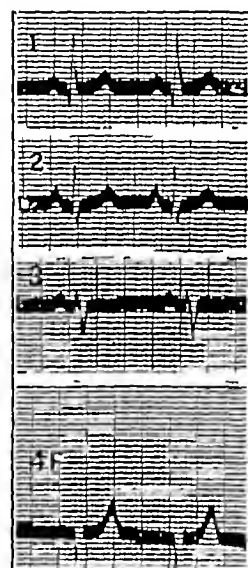


Fig 8—White man aged 28. History of arthritis when 4 years old. No cardiac symptoms. Short faint systolic blow at apex. X-ray examination revealed no cardiac enlargement. Electrocardiogram showed large Q waves in leads 1 and 4F. Final diagnosis rheumatic valvular heart disease mitral regurgitation. Was not re-submitted.

records were borderline. The particular problems concern the length of the PR interval (may it normally exceed 0.2 second by a little in rare cases?), the width and shape of the QRS wave (may there normally be a duration a shade over 0.1 second and is it normal to see prominent S waves in lead 2?), the level of the ST segment (may it be normally elevated by more than 1 mm in the limb leads and 2 mm in lead 4F?) and the shape and amplitude of the T waves (may they be flat, notched or inverted in lead 2 on occasion as well as in lead 3, especially when the heart is vertical in position?).

(f) *Neurocirculatory Asthenia*—There are two problems as far as neurocirculatory asthenia is concerned first, its recognition and second the acceptability of men with slight grades of the condition. We may answer the last question first by stating that there is general agreement that neurocirculatory asthenia or

moderate or pronounced degree, readily diagnosable in civilian life, is ample reason for rejection for any military service. It has been the general consensus of the reexaminers in the present study that it is wise to reject even the mildest cases, though this view is unsupported by factual evidence. The problem of the recognition of the condition is more difficult, however, especially in the milder cases. The diagnosis must therefore be made only by history of symptoms or by actual and perhaps prolonged testing and not by physical signs, such as heart rate and blood pressure, which may be well within normal limits at the time of the induction examination. The syndrome, which includes the combination of dyspnea (usually with sighing), palpitation, heartache, faintness and exhaustion on relatively little effort or excitement, is generally attended in civilian life by some definite psychoneurosis, in particular the anxiety neurosis. This fact, and also the significant report that to date, at least, in this war neurocirculatory asthenia has been found in our armed forces much less often or at least less pronounced than in the last war, suggest that many of these cases have been excluded from the service as a result of the neuropsychiatric part of the induction examination.

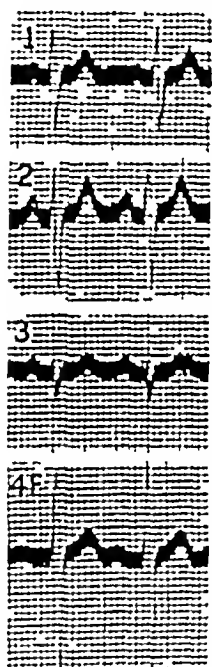


Fig. 9—White man, aged 25. History negative. No abnormal physical signs. X-ray examination revealed no cardiac enlargement. Electrocardiogram showed deep S waves. Final diagnosis: no cardiovascular disease. Was re-submitted.

(g) *Rheumatic Fever*—There is also the problem of rheumatic fever. To exclude registrants simply because there has been a history, even though authenticated, of one attack (or even more) of rheumatic fever in early childhood, in the absence of any evidence of heart damage, has seemed to the reexaminers unnecessary in contrast to the undesirability of accepting those with rheumatic fever within five years, even though the heart seems normal. However, as yet this is really but an opinion and is in need of verification.

(h) *Exercise Tests*—One of the interesting results of this reexamination study has been the apparent neglect of exercise tests or at least of their mention as of any particular importance. To be sure, simple exercises such as hopping or a "standing run" were utilized in the search for diagnostic heart murmurs, in particular the mitral diastolic, but the general recognition that exercise tests yield information about physical fitness in general, rather than about the heart and circulation in particular, was undoubtedly the chief reason for the failure to utilize such tests during this combined study. Such testing would be more applicable, though not diagnostic, in cases of neurocirculatory asthenia, did time permit, but, in the recognition of this condition, reliance was placed largely on the history of symptoms and on neuropsychiatric examination.

#### SUMMARY AND CONCLUSIONS

1 An analysis has been made this year of the reexamination, by physicians trained in the study of cardiovascular diseases, of 4,994 men rejected for military service by local boards and induction stations because of the diagnosis of cardiovascular defects or

neurocirculatory asthenia. The project was carried out under the auspices of the Selective Service System and with the aid of support from the Office of Scientific Research and Development. The registrants were composed of groups of approximately 1,000 men each in five cities—Boston, Chicago, New York, Philadelphia and San Francisco.

2 The chief reasons for the reexamination were to determine (a) the problems in cardiovascular diagnosis that particularly concern the range of the normal cardiovascular system with respect to service, (b) the possible salvage of men for the Army by reclassification as 1A and (c) the comparison of opinions of cardiovascular experts with those of the examiners at local boards and induction stations to determine the desirability of such reexaminations in this or other special medical fields throughout the country.

3 Of the total number of 4,994 cardiovascular rejectees examined, there were 863 (17.3 per cent) resubmitted as 1A and 4,131 (82.7 per cent) whose rejection as 4F was confirmed.

4 The percentage of men resubmitted as 1A was quite similar in Boston (18.8 per cent),<sup>8</sup> New York (19.2 per cent), and Philadelphia (16.5 per cent). In San Francisco 28.6 per cent were resubmitted.<sup>9</sup> Chicago yielded the lowest salvage (3.88 per cent), apparently because of the fact that cardiovascular experts had already been freely used in the decision about doubtful cases, a procedure which might profitably be followed by other examining groups throughout the country.

5 The chief cause for rejection was rheumatic heart disease, found in 2,476 men or 50 per cent of the total 4,994, and in 59.9 per cent of the final 4F group. Mitral valvular disease without aortic valvular disease was diagnosed in the majority of these rheumatic heart cases, 1,500, or 60.6 per cent (750 with obvious stenosis), aortic valvular disease without apparent mitral valve involvement in 280, or 11.3 per cent (72 aortic stenosis and 208 aortic regurgitation alone), and mitral and aortic valvular disease combined in the remaining 628 or 25.4 per cent. Auricular fibrillation complicating mitral stenosis was found in 24 of the cases. The incidence of rheumatic heart disease varied from 70.3 per cent of the rejectees in Chicago to 39.6 per cent in San Francisco.

6 The second most common cause for final rejection was hypertension, found in 1,059 cases (25.6 per cent of the 4F cases and 21 per cent of the total series). The majority showed elevation of both systolic and diastolic levels; a few had either systolic hypertension alone or diastolic hypertension alone. The incidence varied little from city to city but was relatively more common in the fourth than in the third decade.

7 Third in frequency as a cause of rejection was neurocirculatory asthenia with 204 cases (4.0 per cent of the total series, or 4.9 per cent of those finally labeled 4F). Negroes were rarely affected. The incidence varied from 7.8 (8 per cent) in Boston to 11 (11 per cent) in Chicago.

8 The fourth condition responsible for rejection of more than 100 men was sinus tachycardia, there were 189 cases, or 3.8 per cent of the entire group and 4.6 per cent of the final 4F cases. The numbers varied from 75 in Chicago to 8 in Philadelphia.

<sup>8</sup> Another 11.4 per cent were considered borderline in Boston but after special consideration were not resubmitted.

<sup>9</sup> The men resubmitted in San Francisco included a moderate number of 'borderline' cases while in Chicago, New York and Philadelphia the majority of 'borderline' cases were rejected again.

9 The fifth most common cause for rejection was congenital heart disease, found in 183 cases (44 per cent of the 4F cases). The abnormality most commonly diagnosed was ventricular septal defect (Roger's disease) in more than a third of all the cases, 73. Five other defects, in the order of their frequency, were patency of the ductus arteriosus (29 cases), pulmonary stenosis (13 cases and 2 more with the tetralogy of Fallot), coarctation of the aorta (14 cases), auricular septal defect (6 cases) and subaortic stenosis (5 cases). The city incidence varied from over 6 per cent (63 cases) in San Francisco to 18 per cent (18 cases) in Philadelphia.

10 Other causes for rejection included cardiac enlargement alone, determined by x-ray examination (76 cases), arrhythmia in 32, including 17 cases of paroxysmal tachycardia, 6 of uncomplicated auricular fibrillation, 2 of auricular flutter and 5 of auriculoventricular block, electrocardiographic abnormalities alone in another 32 cases including 10 with bundle branch block, cardiovascular syphilis in only 17 cases, thyrotoxicosis in 14, recent rheumatic fever in 13, cardiac strain from chest deformities in 10, coronary heart disease in only 6, pericarditis in 4 and peripheral vascular defects in 3. Unspecified heart disease was diagnosed in 113 cases.

11 A history of rheumatic fever was obtained in slightly over a fourth of all the cases of rheumatic heart disease (28.8 per cent in four of the cities) and in nearly half of those in Boston and New York. A history of chorea was rare (1.8 per cent of the rheumatic heart cases in these same four cities).

12 Although the great majority reexamined were white men there were a good many Negroes (something under 10 per cent, 386 out of 4,035 examined in four of the five cities) and a few Chinese and Filipinos. There was a high rejection rate for Negroes (88 per cent) and a very high rejection rate for the Chinese and Filipinos (100 per cent) in the four cities in which racial data were available. Nine of the fifteen cases of aortic syphilis found in those cities were among Negroes and hypertension was also more often found in the Negroes (38.5 per cent of the final 4F cases compared to 23.1 per cent for the white men). Rheumatic heart disease was evenly represented (63.8 per cent compared to 63.9 per cent) but neurocirculatory asthenia was very much less in the Negroes (0.9 per cent compared to 5.5 per cent).

13 There were eight problems of particular interest which remain unsolved and should be the focus of follow-up study but concerning which tentative opinions were expressed: (a) the interpretation of apical systolic murmurs (may they be very slight or even slight, in the absence of any other abnormal or doubtful finding, be considered adequate reason for rejection?), (b) the upper limits of the normal blood pressure (may the systolic pressure in very nervous young men be set perhaps as high as 160 mm of mercury or even a shade more provided the diastolic pressure does not exceed 90 mm?), (c) the limits of the normal pulse rate at rest (may there not be a wider range say from 40 to 120 per minute than that actually given in the current criteria?), (d) the heart size, which also varies widely, especially according to body build and may perhaps in a few normal individuals exceed the standards set by Hodges and Lyster, (e) the electrocardiogram, of which the wide range of normal has not yet been explored adequately, (f) neurocirculatory asthenia, difficult to diagnose in mild degree,

but probably rejectable even when slight, unless there is an obvious cause which can be corrected, (g) recent rheumatic fever, a hazard even when the heart seems perfectly normal, and (h) exercise tests, the usefulness of which, in cardiovascular examination for military service, is open to question.

14 A follow-up study of the men reclassified as 1A and especially of the doubtful "borderline" cases in the final 4F group should, in the years to come, aid in solving some of the various problems in cardiovascular diagnosis that still remain.

15 The wisdom of extending these reexaminations for the sake of the salvage alone is doubtful in view of the time required, the few expert examiners available and the relatively small percentage of men reclassified as 1A, but the applications of the lessons learned in the course of this study should be helpful in future examinations.

## Clinical Notes, Suggestions and New Instruments

### A SEVERE PEMPHIGUS-LIKE REACTION FOLLOWING ADMINISTRATION OF SULFAMERAZINE

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Another sulfonamide has been released for clinical use, and a list of toxic reactions are certain to follow. Little has been reported on the toxicity of sulfamerazine. Hageman, Harford, Sobin and Ahrens<sup>1</sup> guardedly endorse the drug. They report drug fever and a morbilliform eruption in 2, or 19 per cent, of their cases. Flippin, Geffer, Domm and Clark<sup>2</sup> found no dermatitis in 160 cases of pneumonia treated with sulfamerazine. Geffer, Rose, Domm and Flippin<sup>3</sup> reported 6 cases of drug eruption in 45 cases of meningococcal meningitis. Clark, Flippin and Murphy<sup>4</sup> had 3 per cent toxic dermatitis, none serious. Cutaneous reactions to the sulfonamides are frequent and are usually mild, however, severe and even fatal dermatitis has been reported.<sup>5</sup>

We are reporting a near fatal pemphigus-like reaction to sulfamerazine after the administration of only 4 Gm. over a period of forty-eight hours.

#### REPORT OF CASE

J. I., a youth aged 20, white, was first treated for acute gonorrhea on Aug. 30, 1943. He was given calcium gluconate intravenously and sulfathiazole 8 Gm. daily for one week. At the end of this period the penile discharge was unchecked and he was placed on a mild silver proteinate injection and all sulfonamides were stopped. On September 27 he was started on sulfamerazine two 0.5 Gm. tablets every twelve hours. After only eight tablets in forty-eight hours a generalized macular rash not unlike that of measles was noted. All mucous membranes were fiery red, and there were some tiny blebs in the mouth; the temperature was 102 F. September 30 he entered St. Joseph Hospital with a maculopapular eruption involving the entire body. There were many blebs in the nasopharynx, the

1 Hageman P. O., Harford C. G., Sobin S. S. and Ahrens R. E. Sulfamerazine: A Clinical Study of Its Pharmacodynamics, Therapeutic Value and Toxicity. *J. A. M. A.* 123: 325 (Oct. 9) 1943.

2 Flippin H. F., Geffer W. I., Domm A. H. and Clark J. H. Studies on 2 Sulfanilamide-4 Methylpyrimidine (Sulfamerazine Sulfamethyldiazine) in Man. IV. Treatment of Pneumococcal Pneumonia. *Am. J. M. Sc.* 206: 216 (Aug.) 1943.

3 Geffer W. I., Rose S. B., Domm A. H. and Flippin H. F. Studies on 2 Sulfanilamide-4 Methylpyrimidine (Sulfamerazine Sulfamethyldiazine) in Man. II. Treatment of Meningococcal Meningitis. *Am. J. M. Sc.* 206: 211 (Aug.) 1943.

4 Clark J. K., Flippin H. F. and Murphy F. D. Studies on 2 Sulfanilamide-4 Methylpyrimidine in Man. II. Toxic Manifestations. *Am. J. M. Sc.* 205: 846 (June) 1943.

5 Greenberg S. I. and Meser A. L. Fatal Bullous Dermatitis Following Administration of Sulfamerazine. *J. A. M. A.* 122: 944 (July 31) 1943. Raffetto J. F. and Nichols Stanley A. Nearly Fatal Reaction to Sulfadiazine in a Ten Year Old Girl Involving Skin, Eyes and Oropharynx. *J. Pediat.* 20: 753 (June) 1942.

conjunctiva was edematous and injected. In about thirty-six hours there were many bullae over the body filled with a clear straw colored fluid. There was a positive Nikolsky sign. He was delirious at times. The temperature was of a septic type, varying from 105 to 97 F. The course was septic until October 7, when he began to improve, and the temperature gradually leveled off by lysis. He was discharged on October 23 greatly improved, to convalesce at home. He still had a purulent urethral discharge, but no gonococci were found on a smear. His only sequelae was conjunctival adhesions to the left eyeball, which caused no symptoms.

The patient had had pneumonia three times at ages 6, 7 and 8. No sulfonamides were used. At 9 he had mastoiditis. No sulfonamides were used. In 1942 he had purulent otitis media, which was treated successfully with sulfathiazole without reactions.

Laboratory examinations resulted in a negative Vincent smear from the mouth, blood sulfamerazine on October 2, 24 mg per hundred cubic centimeters, blood culture at height of fever,



Appearance six days after onset. Note denudation. Skin is covered with zinc oxide.

negative, blood count within the accepted range of normal, urinalysis negative except for a trace of albumin and many pus cells (urethral discharge).

Treatment consisted in the intravenous administration of fluids, sedation, multiple vitamin and iron capsules by mouth, zinc oxide to the skin, boric acid packs to the eyes and phenylephrine hydrochloride and ephedrine ointment to the eyes. Parenterally liver extract was administered, massive doses of vitamin B complex, ascorbic acid, menadione and vitamin D.

#### COMMENT

The rapid and acute onset after only 4 Gm of sulfamerazine over a period of forty-eight hours after no toxic symptoms to sulfathiazole probably indicates some type of allergic manifestation. The skin and mucous membrane reactions were not unlike those seen in pemphigus. This was concurred in by a dermatologist and an otolaryngologist who saw him in consultation. This reaction indicates that, although sulfamerazine may prove to be an excellent therapeutic agent, it is not without dangerous sequelae.

Dermat Building

#### TREATMENT OF PITYRIASIS ROSEA BY THE INJECTION OF TYPHOID VACCINE

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Pityriasis rosea is a fairly common acute self-limiting cutaneous eruption which causes no systemic symptoms. Intrinsically it is not of great importance, although it may cause uncomfortable itching in perhaps one third of the cases. However, it causes considerable worry to the patient. Its extensive distribution and unsightly appearance suggest serious possibilities. Untreated it usually heals spontaneously in four to ten weeks, leaving no sequelae. It rarely recurs.

The symmetrically disposed lesions are round or oval pinkish maculopapules which vary greatly in size and are slightly scaly. They are ordinarily easy to recognize, especially if the long axes of the ovals lie along the lines of cleavage of the body. Frequently a "herald spot" antedates the eruption by a week or ten days. The mode of spread of the eruption is as characteristic as the lesions in most cases. As Darier has said, it is "successive, progressive and descendent." Ordinarily the upper part of the trunk and the neck are first affected. The new lesions spread downward on the trunk and along the arms and centrifugally on the lower extremities. In some cases the face may be affected. The hands are almost always spared. Many clinical variants occur. In recent years it has seemed that the typical maculopapules are often accompanied by an extensive eruption of very small follicular papules, and indeed these may seem to dominate the clinical picture. Several instances of this type were included in our series. Again the lesions may be confined to the axillary folds or the groins or both with very little further extension.

The most serious error in diagnosis would be to mistake a secondary macular or maculopapular syphiloderm for pityriasis rosea. This is best avoided by remembering that secondary syphilis is a systemic disease, so search should be made for adenopathy, lesions of mucous membranes, anogenital lesions, palmair and plantar lesions and alopecia. Inquiry should be made for sore throat, hoarseness, headache and other symptoms. A doubtful eruption in a patient with positive serologic tests is not always syphilitic but a dark field examination will usually settle the matter.

A toxic dermatosis closely simulating pityriasis rosea may occasionally follow the administration of arsphenamine, bismuth compounds or gold salts. A careful history will help identify this eruption.

The etiologic agent of pityriasis rosea is still obscure. Many facts point to an infectious agent. The disease rarely recurs in a person once affected. It seems to produce solid immunity. The number of cases seen by physicians in private practice and public clinics is definitely increased during the spring and the fall. It is true that multiple cases rarely occur in one family, but Wile,<sup>1</sup> working in a university community, was struck by the appearance of epidemics of the disease among students living in fraternity and sorority houses. He also was able to present experimental evidence supporting the idea of the infectious nature of the disease. By subepidermal inoculation of volunteers with artificial blister fluid from lesions of pityriasis rosea he was able to produce in 4 instances a sparse, transient generalized eruption which in some ways resembled the natural disease.

The usual methods of treatment of pityriasis rosea are palliative at best and frequently unsatisfactory. The use of ultraviolet radiation from the mercury vapor quartz lamp may shorten the course of the disease but is time consuming. On the assumption that an infectious agent was the cause of the eruption it seemed feasible to treat the disease by the intramuscular injection of typhoid vaccine in the hope that this might have a nonspecific effect in stimulating the general immune processes of the body. The work was done at the Fantus Outpatient Clinic of Cook County Hospital from March to July 1943. Standard typhoid vaccine of the type used to immunize against typhoid was used. Except in the instance of a very young child the dose used varied from 50 to 150 million killed

From the Bernard Fantus Outpatient Department Cook County Hospital.  
I. Wile, U. J. Experimental Transmission of Pityriasis Rosea. Pre-Immunity Report, Arch. Dermat. & Syph. 16: 185 (Aug.) 1927.



organisms. With more experience we used the larger dose. This was administered intramuscularly in the region of the left triceps muscle by using a fine needle held perpendicular to the skin surface. Preliminary suction was made with the plunger to avoid making the injection in a vessel. Some redness and pain were complained of the night of the injection and occasionally the next morning. No systemic reactions were noted. No other treatment, local or internal, was employed.

It is doubtful whether this treatment would be effective in patients who recently had been immunized against typhoid or who had recovered from the disease. There were no such patients in our series.

After some experience with our method we made a search in the literature for reports of similar experiences. Not one was found. However, Findanza, Carrillo and Schujman<sup>2</sup> of Rosario University in Argentina reported the use of mixed streptococcus vaccine in the treatment of pityriasis rosea. They administered three intravenous injections every other day in ascending dosage. Twenty-two case histories were appended with results paralleling our own. The majority of the eruptions cleared in eight days.

A total of 32 patients were treated. Of these, 17, or more than half, were Negroes. The disease is apparently as common among the Negroes as among white persons as the patients coming to our clinic are not predominantly of the Negro race. There were approximately twice as many female patients as male patients. The age ranged from 4 years to 54 years. Five patients were in the first decade of life, 10 in the second and 8 in the third. Twenty-two, or 69 per cent, of the total were under 26 years of age, thus verifying the statement usually made that pityriasis rosea is a disorder of the young. In 24 instances the eruption had been noticed by the patient for one week or less, and in no case was the duration reported by the patient as longer than two weeks.

The smallest dose administered was 20 million killed typhoid bacilli, to a child of 4 years. The other children received 50 million. Patients over 13 years of age received from 100 to 150 million killed bacilli. The larger dose was adopted after more experience with the method. Observations were ordinarily made one week after treatment and at weekly intervals thereafter. Eighty per cent were followed for two weeks or longer. In 75 per cent of the cases serologic studies were made. The Kahn reaction was uniformly negative. A biopsy of a lesion was made in 4 instances with a severe eruption. The sections studied confirmed the clinical diagnosis.

At the end of the first week all lesions had completely disappeared in 4 patients, or 12.5 per cent of the total. Only faint relics persisted in 10, or 31 per cent. Involution was estimated to be 80 per cent complete in 6 others, or 18.7 per cent. Thus a total of 20 patients, or 62.6 per cent, were entirely clear or very greatly improved one week after the injection was administered. Of the remaining 12 patients improvement was estimated at approximately 50 per cent in 7, or 22 per cent. The itching which was a disturbing feature in many instances, particularly among the Negroes, was the first symptom to respond. The eruption instead of progressively extending was not only checked but estimated to be approximately 50 per cent improved. On subsequent observation the improvement continued. In 2 instances, or 6.2 per cent, there was no improvement. In 3 others, or 9.3 per cent, the erythema had faded and the itching ceased but the lesions had not undergone involution. The response in cases with intensive eruption was frequently spectacular. A second injection may be administered one week after the first. However, since pityriasis rosea is self limiting and lasts only a few weeks, we chose in this study to limit our observations to the effect of a single injection.

#### SUMMARY

In the treatment of pityriasis rosea a single intramuscular injection of killed typhoid bacilli causes an abortive involution of the disease if administered early. No unpleasant reactions have been noted. A total of 32 patients were treated with greater success than we have observed with any other type of treatment.

55 East Washington Street.

<sup>2</sup> Findanza, E. P., Carrillo, Francis, and Schujman, Salomon. Results of Streptococcus Vaccine Therapy of Gilbert's Pityriasis. *Semana med.* 13: 1048 (April 2) 1936.

## Special Article

### AMERICAN HEALTH RESORTS

#### THE HISTORICAL BACKGROUND OF RESORT THERAPY

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*These special articles on spa therapy and American health resorts were prepared under the direction of the Committee on American Health Resorts. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the committee. These articles may be published later as a Handbook on Health Resorts.*

Few branches of healing are more ancient than the branch of resort therapy and none, with the possible exception of surgery, has been more influenced in its display by the regard in which it has been held by the physician. Unfortunately, these views have often had little or no relation to the actual benefits of the therapy but they have nevertheless largely determined the extent to which it has been employed. Much of the discussion to follow on the historical background of resort therapy will be concerned with the forces which at different periods have raised this therapy to the central feature of medical care, have reduced it to the status of a superstition, have diverted its main features into voluptuous cultural practices, have opposed its use on the puritanical background that its measures coddled the flesh that needed scourging for the sins of disease, have degraded it to a social fad, have allowed it to pass into the hands of the charlatan and enthusiast as a panacea, have obstructed it with lack of economic provision for care and have brushed it aside with a disinterest that has come from attention fixed on only the novel in medicine. Few branches of therapy have ever suffered more, particularly in this country, from entanglements which had no relation to actual merits. Resort therapy can achieve its valid place in American medicine only when it is evaluated, not in the light of preconceived views arising from these entanglements, but solely on its basic merits.

#### HEALTH RESORTS OF THE PAST

The origin of health resorts, in the sense that the ill and infirm might sojourn in certain favorable localities and there have applied measures, particularly balneotherapy, to the restoration of their health, stems, in the main, as do in crude form all other great principles of therapy, from the priestly healing of pagan peoples.<sup>1</sup> There appear to be some exceptions to this generalization, but they are notable more by their rarity than by any general influence on the ancient origin or spread of health resort therapy. Thus among the East Indians<sup>2</sup> the origin appeared to have been climatic rather than religious. The ancient Sanskrit *Susruta* distinguishes six seasons of the year and describes their effects on men and animals. The rainy season (*Varsāh*) from July 15 to September 15 was regarded

From the Laboratory of Applied Physiology, Yale University.  
<sup>1</sup> Horneffer, A. Der Priester. *Jena. Diederichs* 1912, vol. 2, pp. 37-38.  
<sup>2</sup> Jolly, J. *Medizin in Buhler, G. Grundriss der Ind.-Artschen Philologie*. Strassburg & J. Trubner 1901.

as the most dangerous to health and change to a dry climate was strongly recommended. But so dangerous was this time of year regarded that even in dry places it was necessary to take especial hygienic precautions. The laws of this period imposed on the king the necessity of sojourning in such a locality in this season and of applying suitable measures of hygiene. The migration in following the king was considerable, and, since bathing, massage and general care of the body were emphasized, the representatives of the healing art flocked to those places, which developed into health resorts. Unquestionably also in early but isolated instances mineral springs and the warm spring had been found by chance to give relaxation and relief from pain and so locally obtained a reputation for curative powers.<sup>3</sup>

In Babylon the growth, although not the origin, of health resorts was political rather than primarily religious.<sup>4</sup> When Hammurabi consolidated all the power of the country in the city of Babylon, other sections lost their political and commercial significance, and, to compensate for this loss, they developed the prestige of their temples until these became places of pilgrimage and health resorts.

Aside from such instances as these the origin and growth of the health resort were probably entirely religious. Therapy centered primarily about the sacred spring or well.<sup>5</sup> Water was the essential purifying agent, it visibly removed the spirits which lurked in dirt and in many objects with which the body came in contact. Spirits were the cause of disease, and the ministrations of water cured disease. Drinking the water carried its virtues into the body. Often the seeker after health cast a sacrificial gift into the water as a covenant of his belief and confidence—an important feature for the psychotherapy which was inseparable from any ceremonial religious healing. Wells and springs frequently attained to special significance through unusual and mysterious properties of the water caused by high temperature, bubbling gases or mineral content which gave peculiar taste and odor.<sup>6</sup> Experience has shown that some of these springs have medicinal effects, but their original use probably comes less from empirical observations of these benefits than from religious ideology. It was, however, doubtless the valid benefits experienced that made this form of healing persist while other forms of religious healing tended to decay or alter. Those in search of health made pilgrimages to the healing waters, temples were built for the priests, and quarters were provided for the pilgrims during their stay. Thus it was that many sacred health resorts developed.

The religious element in the health resort of the past has been the greatest inspiration to the use of resort therapy, but it has also been an obstacle to the recognition and acceptance of the actual somatic benefits of this therapy. The patient was inspired to travel

to the resort in the belief that the divine influence emanating from its waters would cure his disease. With his attention fixed wholly on the supernatural element, he was oblivious to the benefits of the salubrious location, to the rest he obtained, to the relief he found by being removed from his accustomed environment and responsibilities, to the balneotherapy he received to the relaxing sunlight or the stimulating altitude and to the possible actual medicinal action of the mineral water. If the symptoms of his disease abated and his health improved—and these frequently occurred—it was the gods on whom his attention was centered who received the credit.

There can be little doubt that the enthusiasm engendered by the conviction of supernatural benefits was a prominent factor in many "miraculous" symptomatic recoveries. But equally there can be little doubt that many pilgrims who sojourned at the ancient wells and springs, particularly those who had chronic infections, skin diseases, arthritic and rheumatic disturbances, hypertension, gastric and nervous disorders and those who were convalescents were definitely, if less spectacularly, benefited.

These benefits were no doubt particularly obvious in the instances of city dwellers, since for them there was an especial element of rest and relaxation in the visit to the resort. Sigerist<sup>7</sup> attributes the growth of health resorts in part to the development of cities and the corresponding development of a definite need for periodic change of surroundings. Statements of this association of city and resort occurs frequently in older writings, thus Carey<sup>8</sup> in 1799, in giving his views of the curative and social advantages of various English resorts says "they (the waters of Cheltenham) are said to relieve an aching head, clear an over-charged stomach, and promote good appetite, disorders naturally brought on by the mode of living in London."

With the rise and spread of Christianity, the pagan healing waters became Christian healing waters,<sup>9</sup> the curative effects were usually attributed to the endowment of a patron saint. Under Christian influence there was a tendency to minimize, or even to abolish the physical ministrations which had played an important part in some pagan therapy and to elevate the supernatural element. Mere visit and ceremony at the well or spring were sufficient for cure, and by extension for convenience, ordinary waters of any stream or ocean were given curative powers on special occasions, as St. John's night or Easter morning.<sup>10</sup> Such healing has persisted, although the belief in the supernatural powers as curative forces is no longer held by the physician. Consequently to him this form of healing has become a superstition.<sup>11</sup> He dismisses any reputed cure as due solely to psychotherapy. But, unfortunately, the association of water at the holy well and in the health resort sometimes leads him to transfer something of his opinion from the one to the other, even though no feature of religious healing enters into the health resort. In reality, the procedures surrounding the holy healing wells are not true or complete repre-

<sup>3</sup> Sigerist, H. American Spas in Historical Perspective, *Bull. Hist. Med.* 11: 133-147, 1942.

<sup>4</sup> Jastrow, M. Die Religion Babyloniens und Assyriens, Gießen, Topelmann, 1905, vol. 1.

<sup>5</sup> Rohde, E. Psyche, eds. 5 and 6, Tübingen Mohr, 1910. Olden, H. Die Religion des Veda, Stuttgart, Cotta, 1917. Wiedemann, A. Herodotus zweites Buch, Leipzig, Teubner, 1890. Weinreich, A. Antike Heilungswunder, Gießen, Föppelmann, 1909. Horneffer.<sup>1</sup>

<sup>6</sup> Walton, A. The Cult of Asklepios, in *Cornell Studies in Classical Philology*, 1894, vol. 3. Marggraf, H. Badewesen und Badetechnik der Vergangenheit, Berlin, Habel, 1881.

<sup>7</sup> Carey, G. The Balnea, ed. 2 London, W. West, 1799.

<sup>8</sup> Preisigke, F. Antikes Leben nach den ägyptischen Papiri, Leipzig, Teubner, 1916. Horneffer.<sup>1</sup>

<sup>9</sup> Grimm, J. L. K. Deutsche Mythologie, ed. 4 Berlin, F. Duncker, 1875-1878, pp. 487-515. Wuttke, A. Der deutsche Volksaberglaube der Gegenwart, ed. 2, Berlin, Wiegand & Griehsen, 1869, p. 17. Reinhold, Düringsfeld, O. Das festliche Jahr, Leipzig, Spamer, 1863, p. 43.

sentatives of the principle of the health resort, they are, as indicated here, extensions of the theological but not the physiologic features of these resorts

#### RELIGIOUS AND NONRELIGIOUS ELEMENTS

The rational development of the nonreligious element of ancient resort therapy was made in the classic period of medicine, which began with the time of Hippocrates. Many of the therapies passed with little change, except that of theory and ceremonies, from the religious rites of the temple to the rational recommendations of the physician. Sojourn at a special resort might be omitted—and indeed it was desirable to do so in many acute diseases—but the basic somatic therapy used at the temples became the basic therapy of the bedside.

Prior to this period, the healing of internal diseases was in the hands of the priests of Aesculapius. Surgery was not given this dignity. There was no mystery about wounds, cause and effect were obvious. Internal diseases were regarded as manifestations of the malign influence of gods and spirits, demons and heroes and hence within the domain of the priest. The temples of Aesculapius were dedicated to the care of the ill. These temples were health resorts, they were often beautiful stone buildings with shady colonnades and olive groves and great courtyards with fountains. The ruins of many exist today. The emphasis in the healing procedures was on divine intervention received during the temple sleep, but the feature important to resort therapy lay in the fact that the patients did not receive the divine aid immediately on their arrival but only after a period of preparation. While they waited with hope and enthusiasm for their day of cure they lived in inns outside the temple. As part of the preparation the patients were made to observe certain rules for physical and spiritual purification. These rules included the general therapy of a health resort: rest, sleep, diet and bathing and probably, in many instances, the use of mineral waters. The actual physical benefits of the temple treatment undoubtedly came from this regimen, which the priests had probably long since observed as an important adjuvant to the religious ceremony which climaxed the treatment.

Under the hippocratic philosophy of medicine the inherent recuperative powers of the body received their fullest and most salutary recognition—a recognition which at subsequent periods of medicine, even perhaps the modern, was too often obscured by the belief that the cure was effected by the therapy. The principle of this ancient philosophy was summed up in the famous, modest, but honest statement of Pare: "I treated him and God healed him." Under the hippocratic doctrine<sup>10</sup> disease was due to a disturbance in the humors of the body, the therapy was designed to assist the workings of nature, as the physician understood nature, in restoring the normal balance of the humors. The practices of the therapy were those found empirically in the long experience of priestly health resorts to be harmless and beneficial, and this basic therapy was fresh air, light, massage, balneotherapy, local application, diet, purgation and the relaxation of a quiet and restful environment.

Within this classic period there is a notable example of the sensible separation of theory and practice which,

particularly in relation to the history of resort therapy, bears repetition here. Often, in the history of medicine, therapy has been developed solely on a theory, and, with each shift of theory, therapy has altered even to the extent of complete reversal. The instance here, to the contrary, is that from the school of Asclepiades of Bithynia (128 B. C.) under which the theories of causation were entirely opposed to those of the hippocratic.<sup>10</sup> Disease was viewed not as a disturbance of the humors but as a constriction and relaxation of its solid particles, the doctrine of *strictum et laxum*, which was subsequently revived as the brunonian theory of sthenic and asthenic states and Hoffman's theory of tonic and atonic conditions. Under the Asclepiadean doctrine nature was not to be assisted but systematically interfered with. This theory, however, did not in this fortunate instance in any way alter the therapy used, it was the same as that of the hippocratic school, a therapy which, on the basis of centuries of empirical observation, was found to yield the greatest curative benefit of any therapy then available.

The classic therapy, whatever the theory which dictated it, did not give spectacular results, the measures used were commonplace, they were often slow in operation and they were frequently time consuming for the physician. In subsequent periods, when theory became the dictator of therapy, it was often found easier by the physician, and more impressive to the patient, to prescribe a medicine or order a purge and bleeding than to nurse back health by the simple but tedious methods of classic therapy. And, as we look back, it is clear that many of the highly vaunted medicines probably had less actual virtues than the religious element of the ancient health resort and that the clyster and phlebotomy knife were more often than not true obstructions to the recovery of health. It was only the inherent recuperative powers which allowed many of the patients to survive in spite of the remedy.

The classic therapy of assisting nature is today, although not exploited as such, the basis for all therapy when better and more specific methods have not been developed. This fact gives the ancient therapies an almost negative position in the continual search for more aggressive methods, they are not looked on as curative and hence are not given the emphasis or used with the enthusiasm and perseverance that existed when no other methods were available. The search for the novel, the specific, which in certain diseases, but certain ones only, has yielded the spectacular results of some modern therapies has so attracted attention that we are prone to forget that for many diseases—and of consequence often chronic diseases—there are no better therapies than those of the classic period of two thousand years ago. Hippocrates had successes with only the means at his hands. Likewise there seems to be a tendency in modern medicine, even though it may not be explicitly expressed, toward the Asclepiadean theory of interference with nature, a theory which in the past has given some of the most undesirable therapies in the history of medical practice. There is an inclination to view the success of surgery and of specific medications as an interference with the course of disease while in reality the surgery and the medication may operate more often, as Hippocrates saw them, by removing obstructions to the free display of the inherent healing power of the body.

<sup>10</sup> Garrison Fielding, *An Introduction to the History of Medicine*, ed. 4 Philadelphia, W. B. Saunders Company, 1929.

## EMPIRICAL NATURE OF RESORT THERAPY

Resort therapy has had no striking and accepted theory to explain its benefits. Little modern investigation has been inspired to find any basis for its benefits. They are essentially empirical—as empirical as the most commonly employed, most unspectacular but most widely beneficial therapeutic measure of all modern medicine—rest in bed. They are as empirical in their benefits as is sleep. The scientifically trained physician is inclined to belittle—and often justifiably so as experience has shown—therapies that have only empirical basis. And yet many of the most ancient of resort therapies have been important rediscoveries of modern medicine and as such have had no firmer basis than the observation that the patient benefited, among these, to mention only a few, are the ice pack, the cold or hot application for inflammation, infection and sprains, the use of cold water both externally and internally in fever and in insolation and the use of continuous sedative warm baths for certain psychotic manifestations. The last use was commented on most favorably by Smollett<sup>11</sup> in the eighteenth century, but the theory he postulated would seemingly discourage any physician from using the practice today. “the use of it [the warm bath] is nothing more successful, than in *maniac* disorders, whether the melancholy or frantic species both these are owing to a disordered circulation in the brain, occasioned by a thick foul viscosity in the juices, which, by a nervous constriction of the lower parts are forcibly driven upwards, yielding an impure and interrupted secretion of the animal spirits, and disturbing their containing vessels, so as to create various *Chimæras* in the imagination.” The explanation of the manic depressive psychosis is perhaps no more satisfactory today, but the empirical benefits of the bath have fortunately survived.

From the development of alchemy and particularly the works of Paracelsus, great virtue was attached to the mineral content of medicinal waters. The application of crude chemical analysis was exploited in the hope of determining the basis of their virtues, but by the eighteenth century it led instead to the opposite result. It cast doubt on the medicinal virtues by finding in many famous waters no more mineral ingredients—and of no more peculiar nature—than in some city water supplies. This finding may be a bona fide condemnation of mineral waters in general, but equally it may be an expression of the inadequacy of chemical analysis. It was not by chemical analysis that vitamins were discovered in foods, the chemical analysis for their assay was developed only after their presence was postulated by biologic experimentation, and the findings of the biologic experimentation can now be seen, with the clarity of hindsight, to be writ large in the medical experience and domestic experience of the past. On this feature Sigerist,<sup>3</sup> urging the promotion of laboratory and clinical experimentation on balneotherapy says “Chemistry until recently was gross chemistry—micro-chemistry is in its infancy still and we are beginning to realize that a few molecules of a chemical compound can cause definite biological reactions. The theory of dissociation and the discovery of radioactivity greatly stimulated the study of medicinal springs and Bau-

disch<sup>12</sup> has pointed out how important and illuminating Alfred Werner's concept of coordinated valence (co-valence) is in this particular field.” The recent discovery of the considerable effects on the teeth of minute traces of fluorine in drinking water is also suggestive.

Smollett,<sup>11</sup> previously quoted on the use of the warm baths in the manic state, had an especially pertinent comment on the relation of chemical analysis and healing virtue. He said “Such diversity of opinion, among those who have laid themselves out for *analyzing* Mineral Waters, cannot fail to perplex and embarrass people who attempt to reason upon the use of them, without having had the advantage of seeing their effects, in a long course of practice, by which alone their Medicinal Virtues are to be ascertained.”

In ancient as in modern times the balneotherapy consisted both in the internal use of medicinal waters and in the external application at a great range of temperatures and in a great variety of methods—the immersion bath, local application, douching and the vapor bath. Hippocrates writes of warm springs impregnated with copper, silver, gold, sulfur, and bitumen and niter. Aristotle, Strabo, Theopompus, Archigenes, each in turn, has commented on the virtues of mineral waters. Galen eulogizes certain of them for treatment of the gravel, and Vitruvius and Seneca, Celsus and others of the general period detail the use of various waters for different complaints, especially those of the stomach and liver, the skin (sulfurous waters for scabies) and for rheumatism. Pliny, with his flair for classification, treats the mineral waters in much the same manner as the chemists of the eighteenth century, but without the aid of their analytical methods, as acidulous, sulfurous, saline, nitrous, aluminous, ferruginous and bituminous.<sup>13</sup>

Most of the ancient writers on mineral waters, including Hippocrates, warned against their use as common beverages. In line with the disappointing discoveries from chemical analysis in later centuries has been the fact that many famous mineral waters with reputed curative powers have become widely used table waters with no indication of either ill effect or, what is more pertinent, any exuberance of health in the users who were normal. Again, as with chemical analysis, this cannot be taken by the openminded as refutation of long empirical observations. It proves only one fact, nothing more nor less—that a healthy person is not made appreciably more healthy by their use. It is likewise true that a healthy man does not become healthier and his blood redder when he takes an excess of vitamins and iron, but this fact does not prove that the debilitated and anemic show an equal lack of benefit on taking them.

These statements, and those concerning chemical analysis, are made here not because the author knows of any laboratory evidence which proves the benefits of mineral waters but to present in more fairness than is sometimes shown by the physicians of this country the situation with regard to the medicinal waters. Regard in these respects is definitely a part of the

<sup>12</sup> Baudisch, Oskar. *Magic and Science of Natural Healing Waters*, J. Chem. Educ. 16: 442, 1936.

<sup>13</sup> Patissier, P. *Manuel des eaux minérales de la France*, Paris, Mequignon Marvis, 1818. Martin, A. *Deutsches Badelchen in ver-gangenen Tagen*, Jena, E. Diederichs, 1906. Marcuse, J. *Bader und Badewesen in Vergangenheit und Gegenwart*, Stuttgart, Enke, 1933. Sudhoff, K. *Aus dem antiken Badewesen*, Berlin, Allg. med. Ver-lagsanstalt, 1910. Negrier, P. *Les bains à travers les ages*, Paris, Librairie de la construction moderne, 1925.

<sup>11</sup> Smollett, cited by Jones, C. E. “Essay on External Use of Water” by Tobias Smollett, *Bull. Inst. Hist. Med.* 3: 3182, 1935.

historical background of resort therapy since, as stated at the beginning of this article, it has been regarded rather than demonstrable facts of scientific investigation for or against such therapy which has influenced its use and consequently its historical situation. On the one hand, there is a paucity of substantiated scientific evidence to support a consistent claim for the healing virtue of mineral waters, other than that some waters are laxative and many influence gastric motility<sup>14</sup> and circulation presumably because of their content of carbon dioxide, on the other, there is more than two thousand years of empirical observation. While waiting for a determined scientific investigation which will give indisputable proof, or disproof, the attitude of the medical scientist can properly only be that of open-mindedness. Such investigation as suggested will probably not be instituted, however, until the medical profession at large develops a far greater interest in many of the chronic, disabling but not incapacitating diseases and their distressing symptoms than is at present widely evident.

#### RESORT THERAPY IN ENGLAND AND AMERICA

Among the Greeks and Romans the balneotherapy of the ancient temples was developed into a cultural practice of esthetics, luxury and hygiene. Wherever the Romans settled in their conquests, the bath became a central feature of the civilization which they imposed on the conquered. In Rome the skill of the greatest architects and engineers was devoted to the development of famous baths, both public and private. The public baths were open to all classes for an insignificant fee, they were often great clubs with libraries and lounges. The bath itself was formalized as a ceremony and became a central feature in daily life, so much so that it constituted part of the demonstration of public rejoicing equal with other spectacles and, like them, was prohibited as a sign of mourning when the country suffered any calamity. In the Mohammedan countries of later date the vapor bath with plunge, massage and rest achieved as important a position in daily life if not as great a one in national affairs.

The extensive use of bathing in the Mediterranean and Eastern countries is in contrast to its little use in England and America in the eighteenth and nineteenth centuries.<sup>15</sup> A warm bath in the latter countries was an impressive ceremony not to be undertaken lightly. In both countries there was generally a great timidity about wetting the skin and a considerable fear that dire results would follow from immersing the body. Taking the waters at Bath or a similar resort, at the basin or under the pump, or timidly entering the sea water in a bathing machine had a distinctly daring quality that needed the support of a physician's advice. It was Count Rumford<sup>16</sup> who at Harrowgate carried out the hazardous experiment of taking a warm bath every day for thirty-five consecutive days, staying each time for a half hour in water at 96 F. Instead of suffering from the dire consequences that were predicted, he found instead "a better appetite for

my dinner a better digestion and better spirits, and was stronger to endure fatigue, and less susceptible to cold in the afternoon and evening."

A more detrimental influence than fear of bodily cleanliness militated against the health resorts of both England and America. It was the overdevelopment of the social features of the resort. Many became fashionable watering places far more than health resorts, it was the paying guest rather than the ailing guest who received attention. This feature was often clearly indicated in the descriptions of the English resorts, such as that of Carey<sup>7</sup> in the eighteenth century, who, in describing the charms of Margate, complained that it was hard to hear the actors at the theatrical performances held in the evening because of the "noise produced from the multiplicity of dice boxes which were generally rattled at the theatre hour."

In the early days of New England the sojourn at a health resort was a conception that was entirely incompatible with the puritanical idea of rigorous discipline of the flesh. At the time of the Revolution, however, there was, as Thoms<sup>17</sup> has indicated, a developing interest in such resorts. In the more southern part of the United States health resort therapy was taken seriously. Bell<sup>16</sup> has given an excellent description of the early resorts of this country. In time, however, the social rather than the medical feature became predominant and many of the resorts which had played host to ailing men and women became centers of sporting activities with a wealthy and far from ill clientele.

This social feature, with the highly important one of economics, has done much to hamper the development of health resorts in the United States. The economic feature is fully discussed by Sigerist<sup>3</sup> in his article, previously cited, "American Spas in Historical Perspective." Most of the European resorts made full provisions for patients of humble means, many of these resorts, as also Saratoga and Hot Springs National Park in this country, are not privately owned but publicly. Sigerist describes the Russian system of supporting the resorts as a particularly advantageous one and the reader is referred to his article for full discussion of this important feature.

Social and economic factors were no doubt discouraging influences in determining the attitude of the American physician toward resort therapy, but equally so were the extravagant claims that many of these resorts made as to the efficacy of their cures. When the supernatural element was the inspirational feature of resort therapy, many spectacular symptomatic recoveries could be expected among psychoneurotic and hysterical patients, the blind would see and the paralytic would walk. But even these recoveries were exceeded by those claims for some of the resorts of the nineteenth century which were privately owned and operated by enthusiasts or charlatans, malaria, consumption, syphilis and cancer were, according to the literature of these establishments, cured with the same ease and certainty as by the "patent medicines" of the period, and the cure was supported by the same evidence, that of testimonials of the patients.

In contrast to these misconceptions and misrepresentations, which have done much to discredit resort therapy in this country, it is refreshing to turn to the

<sup>14</sup> Binet M and Lebon H. De l'influence du bicarbonate de soude sur la duree de l'evacuation stomacale. *Clinique* Paris 7: 241-243, 1912.

<sup>15</sup> S. Mohamed author of *The Bath* (London 1843) although possibly prejudiced since he was the owner of a bathing establishment comments pungently on the lack of ordinary bodily cleanliness of the Englishmen of his times.

<sup>16</sup> Bell J. *On Baths and Mineral Waters*. Philadelphia: H. H. Porter, 1831.



old records of some of the English resorts and classify the cures which were attested by the attending physicians. The inadequacy of diagnoses is more than compensated for by the lack of any supernatural attributes and of any blatant advertising, and by the sincere support of the medical profession of the period. Thomas Guidott,<sup>18</sup> physician at Bath in the late seventeenth and early eighteenth centuries, records some two hundred cures from the register of Bath for that period. No record is given of the total number of individuals treated or the number of failures, although the presumption is that the latter was high since many of those coming for treatment undoubtedly had incurable diseases of long standing and were sent by their physicians to Bath as a last hope or for relief of some symptom. Such temporary relief was not recorded in the register, although the implication in the writing is that it was frequent. There could not, of course, at that period be any record of amelioration of hypertension or any other disturbance requiring instrumental detection. In somewhat over a hundred of the cures recorded, sufficient indications are given of the nature of the disease to permit tabulation, and this tabulation

*Nature of Diseases Most Frequently Benefited at Bath*

Disease	Per Cent
"Old aches" and persistent pains including those from old traumatic injuries	20
Rheumatism, lumbago, sciatica ("hip joint") and gout	19
Skin diseases, including fistulas and ulcers	14
Palsy	13
Gastrointestinal, urinary and liver disturbances	10
Weakness	10
Lameness	8
Paralysis	6

is given here solely to indicate the nature of the disease which the physician of the time found to be most frequently benefited.

Even at Bath at this period some of the patients who obtained relief were unquestionably suffering only from psychoneuroses. Likewise it is probable that some of the disturbances would have cleared up without any treatment. It is possible that these factors may have operated in a fair proportion of the palsies, lameness and paralyzes, which constituted some 27 per cent of the cures. It is improbable that they would play an important part in the "old aches" and pains, the rheumatism and skin diseases which constituted 53 per cent of the cures. In many instances the statement is made in the "register" that the pain or disease had been present for long periods before treatment at Bath and that in the instance of the pains and rheumatic disturbances the amelioration of the symptoms occurred soon after the treatment was started and continued with slow but progressive improvement. In a few instances there are reports on the satisfactory condition of the patient for months or even years after the cure. It is gratifying to notice that no cures are claimed for consumption, although improvement is noted.

On the continent of Europe, resort therapy had a long and dignified history, it was supported by the medical profession and its principles were taught in the medical schools. Many Americans in the last and

present centuries went to these spas and it is estimated that, in 1930, 100,000 Americans took treatment in European spas, spending some \$100,000,000.<sup>19</sup>

Interest in the French mineral waters is said<sup>20</sup> to have been revived for a brief time by Charlemagne who had a bath constructed for the use of his family at Aix la Chapelle. A more persistent and more definitely medical interest arose near the end of the fifteenth century, especially in Italy. In 1489 Savonarola of Padua wrote what may be the first medical treatise on baths, he dealt mainly with the thermal waters of Italy. Bell,<sup>16</sup> in commenting on this serious interest, makes a statement which could be applied to a later period when, in this country, resort therapy did not receive the wide or serious support of the physician, he says "Until then [the late fifteenth century] the mineral springs were the rendezvous of gamblers and provincial buffoons, and the superintendency of the waters was left to quacks, who readily imposed on blind and superstitious credulity." Henry IV of France is said to have corrected these abuses by an edict, later confirmed by Louis XIV, XV and XVI, from which superintendents were charged with the control over the use of mineral waters, baths and fountains of the kingdom, subsequently resident physicians were appointed by the government. Most of the European spas have been maintained under a modification of this general system which has done much to prevent their abuse and to maintain a high scientific interest. The system has carried with it provision for the treatment of the poor and those of moderate means.

#### BALNEOTHERAPY AND RESORT THERAPY

While balneotherapy has been emphasized in the discussion here as a central feature of resort therapy it is nevertheless, as pointed out earlier, only one of the features, the rest, relaxation, relief from responsibility, change of environment, diet and climate each plays its beneficial part. On the ancient bathing establishment at Bejae on the gulf of Naples where the emperors came for "cure" is the inscription "Qui curat non curatur." Some of the balneologic features which at one time were exclusively those of the resort have been, as likewise indicated earlier, taken over in the treatment of diseases of a nature not treated at the resort. The use of the cold pack, bath and douche first studied in typhoid by James Currie in the eighteenth century, employed by Cullen and put on a firm basis by Ernest Brand in 1861, serves as an instance of this progeneration, and in this instance the offspring had advantages not so liberally shared by the parent. Most of the conditions for which resort therapy is used cannot be subjected to the same positive diagnostic evaluation or direct measurement as can those, such as typhoid, which are acute and for which the thermometer often serves as an index of change in severity and mortality statistics as a prompt and convincing index of the success of therapy. Until investigation yields equally exact indexes for the diseases to which resort therapy is suited, this therapy will be forced to share some of the disadvantages of the diseases for which two thousand years and more of observation have indicated that it is beneficially applicable.

<sup>19</sup> Beazell, W. Report on the Spas of the Eastern United States. Report of the Saratoga Springs Commission to the Legislature, No. 70, Albany, N. Y., 1930.

<sup>20</sup> References given in footnotes 13 and 16.

<sup>18</sup> Guidott, Thomas. Treatise Relating to the City and Waters of Bath, London, J. Leake, 1725.

## Council on Pharmacy and Chemistry

AT ITS ANNUAL MEETING IN 1942 THE COUNCIL ON PHARMACY AND CHEMISTRY DECLARED CONTRACEPTIVES ELIGIBLE FOR CONSIDERATION ON THE SAME BASIS AS THERAPEUTIC AGENTS. PRIOR TO THIS TIME THE COUNCIL'S CONSIDERATION OF THE CONTRACEPTIVE PROBLEM HAD CONSISTED IN SPONSORING WITH THE COUNCIL ON PHYSICAL THERAPY OCCASIONAL STATUS REPORTS. TO AID THE COUNCIL IN ITS CONSIDERATIONS AN ADVISORY COMMITTEE CONSISTING OF OUTSTANDING AUTHORITIES IN THIS FIELD WAS FORMED AND IT PREPARED A SET OF CRITERIA SO THAT CONTRACEPTIVE AGENTS MIGHT BE EVALUATED CONSISTENTLY AND FAIRLY. AT FIRST THE COUNCIL ON PHARMACY AND CHEMISTRY WAS PREPARED TO CONSIDER CHEMICAL AGENTS SUCH AS JELLIES AND CREAMS AND PHYSICAL DEVICES SINCE THE LATTER ARE OFTEN PART OF THE CONTRACEPTIVE PACKAGE AVAILABLE ON THE MARKET. LATER THE COUNCIL ON PHYSICAL THERAPY VOTED TO COOPERATE WITH THE COUNCIL ON PHARMACY AND CHEMISTRY BY RECEIVING FOR CONSIDERATION AND INVESTIGATION PRODUCTS RECOMMENDED FOR CONTRACEPTION (APPLIANCES BUT NOT DRUGS) AND BY REVIEWING DATA OR OTHER EVIDENCE SUBMITTED BY THE FIRMS OR BY ORGANIZATIONS EITHER SUBSTANTIATING OR REFUTING THE EFFICACY OF THESE PRODUCTS. BY THE TIME THE LATTER DECISION HAD BEEN MADE THE COUNCIL ON PHARMACY AND CHEMISTRY HAD REVIEWED THE STATUS OF APPLIANCES SUBMITTED BY TWO FIRMS BUT VOTED TO REFER ALL OTHER SUBMISSIONS OF APPLIANCES TO THE COUNCIL ON PHYSICAL THERAPY. THUS THERE FOLLOWS ON THESE PAGES A DESCRIPTION OF CERTAIN PHYSICAL DEVICES WHICH RECEIVED EARLY CONSIDERATION BY THE COUNCIL ON PHARMACY AND CHEMISTRY.

THE COUNCIL HAS ALSO AUTHORIZED PUBLICATION OF THE FOLLOWING STATUS REPORT BY DR. ROBERT I. DICKINSON, STATEMENT OF ACTIONS AND USES FOR NEW AND NONOFFICIAL REMEDIES AND CRITERIA ON WHICH SUCH CONTRACEPTIVE AGENTS HAVE BEEN EXAMINED. AS POINTED OUT THESE CRITERIA MAY BE CHANGED AS EXPERIENCE GROWS.

AUSTIN E. SMITH, M.D., Secretary

### CONCEPTION CONTROL

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NEW YORK

Medicine is beginning to assume responsibility for marriage counsel, for fostering desirable fertility, for prescribing protection against unwise or hazardous pregnancy, for providing sex instruction to further enduring marriage. The ability to give advice on bearing all the children compatible with well-being of parents, progeny and community calls for knowledge of the best methods of spacing births. Twenty years of experience in clinics, urban and rural, has been studied and summarized.<sup>1</sup> Basic research for better means is well started. There is demand for ways of protection covering a longer or shorter continuous span, as well as for those suited to the very poor out of reach of medical attention. Harmlessness, simplicity and low cost are counted as essentials. Preferred means are those in the hands of the partner most concerned, the wife.

There are two methods outstanding and equal in degree of protection. These are the diaphragm combined with jelly and the condom. For permanent prevention of pregnancy vasectomy and salpingectomy are increasingly utilized, the latter sometimes immediately after delivery. No single method encompasses all the variants in preference and in unusual conditions. The male may resort to the condom, withdrawal, closure of the spermatic ducts, the female to the fitted diaphragm with jelly or cream, the cervix cap, jelly or cream alone, douche, suppository, sterile or safe period and closure of the fallopian tubes.

Openmindedness in prescribing contraceptives is in order. Whatever method has yielded efficacy, satisfaction and a sense of well-being to a given couple should be endorsed but may be accompanied by an offer of an alternative. As an example, diaphragm-jelly appeared effective enough for prescription to the exclusion of

all other methods, but long years of follow-up observation have shown a large number of couples sufficiently dissatisfied to return to their earlier procedures.

#### DIAPHRAGMS AND CAPS

Of the two kinds of cover for the cervix, the smaller depends on retention by suction preferably to the fornices around the projecting portio. The other provides a partition in the vagina, the upper or anterior pocket holding the cervix, the lower or posterior part providing the channel for the penis. High protection rate depends not a little on the doctor's skill in fitting, as in all office gynecology, doctors outside this specialty (and often within it) need a brief teaching in a birth control clinic, particularly in order to cope with the difficult cases. The diaphragm is unsuited to much damaged or relaxed pelvic floors or to the short (infantile) forms of anterior vaginal wall, all of these preventing the front rim of the device being held well up to the pubic arch. An obese woman with short fingers cannot reach in far enough. There may be objections of psychologic origin.

Bimanual and speculum examinations precede measurement, selection and fitting. The size of diaphragms most used is 75 (diameter in millimeters), the range from 50 to 105. The size chosen should be as large as is comfortable. The woman examines the device after the doctor has placed it and removes and replaces it. She must learn to recognize the cervix both covered and defectively protected, and appreciate the correct subpubic location of the anterior rim. Sometimes a long thumb may guide the farther rim past the cervix, or the compressed oval can slide to one side of the cervix. Postures such as sitting on the edge of a chair or squatting may help. For premarital fitting the patient may be instructed about gradual self stretching of the hymen up to the passage of her two fingers, which diameter permits placement yet remains within the limits of anatomic virginity. A mechanical inserter or introducer has some advocates, as it imposes an oval form on the spring during introduction, readily pushes the far rim past the cervix and minimizes intravaginal finger contacts for those who object to such contact. The diaphragm is fully lubricated with a contraceptive jelly for introduction, plus a near teaspoon in the fold that goes up against the cervix, whether one's preference is with the device used cupwise or domewise. Leaving the diaphragm in place six or eight hours after ejaculation obviates the need of a douche. If removed soon after coitus, part of the douche precedes taking out and part follows, with due care to distend fully the vaginal passage. A condition improper for the circular device is cystocele, for which the forms called Matrisalus or Duraflex (resembling a reversed Smith-Hodge pessary) lift the sagging front wall up behind the symphysis. Short anterior walls and very conical cervixes are indications for caps or condoms.

The rubber caps that fit more or less snugly around the cervix are the French, Prorace (Stopes) and the Mizpah, the Dumas being of intermediate size and with suction action. The hard caps are metal or plastic, best with a thickened rim. These hard caps may be worn for one night, for days at a time or continuously between periods. They are said to afford a definite degree of protection against gonococcal infection of the cervical canal.<sup>2</sup> Prolonged wear requires healthy organs in women who can manipulate the device and individuals who can be trusted to report often enough during test-

<sup>1</sup> Dickinson, R. L. *Techniques of Conception Control*. Baltimore: Williams & Wilkins Company, 1943. *Control of Conception*. Baltimore: Williams & Wilkins Company, 1938.

<sup>2</sup> Pinkus, Felix, professor of dermatology, Frederik Wilhelm Institute, Berlin. Fertility in Woman, personal communication to the author.

ing to be sure irritation is not caused and who will make their own observations on fluid retained and its odor, and clean the interior as often as indicated. Hard caps have for decades greatly outsold diaphragms in Germany.

As the diaphragm cannot be sperm tight at the contact circle with the vaginal walls, spermicidal jelly or cream is a necessary adjunct.

#### TAMPONS AND SPONGES

A wad of wool or cotton or a fine meshed rubber or marine sponge is the carrier of a chemical and is provided with a thread for removal. The contraceptive is jelly, cream or powder. When powder is used the sponge is first moistened, then dusted, then squeezed to produce foam before its insertion. These protectives are used by persons out of reach of physicians.

#### JELLIES AND CREAM

Contraceptive jelly is the general term for the semi-fluid preparations made for deposit in the upper vagina, and it includes creams or pastes. The objectives of using such agents are two, blockade of the opening into the cervical canal by adequate viscosity and paralysis of spermatozoa by a spermicide of high efficiency. The average amount used is 1 teaspoon (5 cc) injected through a nozzle screwed onto the supply tube after taking off its cap, or drawn into a slender tube syringe that fills from a supply tube. Dosage is regulated by a turnkey on the end of this tube or by the size of the syringe. A well adjusted viscosity keeps part of the preparation in place some hours after coitus. The consistency persists for a year or more in some kinds, while in others it changes in summer temperatures or separates into solid and liquid portions. Hence dating is desirable. The vehicle should be water soluble and not sticky. The chemical must not cause local irritations or damage as do cresol preparations if concentrated and mercuric chloride. The latter, even when dilute, affects the kidneys of some patients.

#### SUPPOSITORIES

Suppositories possess the unique advantage of being free of apparatus but also the drawback of uncertainty of time needed for melting and spreading in the vagina and, if soluble at body heat, of running into paste in our summer temperatures. In cooler England they have long been popular and endorsed.

#### DOUCHES

To distend the vagina so as to open out every fold, the vulvar lips must be held together about the nozzle, then freed for each successive gush of water. This can be done by pelvic floor muscles if strong, by finger pressure, or by the conical shields on some nozzles. As sperms are rubbed during coitus into mucus on the external os and travel an inch in eight minutes, prompt action is called for, even without acceptance of the idea of "insuck" into the uterus. Among household remedies are strong soapsuds, vinegar (2 tablespoons to the half pint), alum (a level teaspoon) or lemon juice (a tablespoon to the quart). The effervescent douche directly from the neck of the bottle of the popular cheap carbonated acidulated beverages is much used and is spermicidal.

#### LATHERING

Immediate scrubbing of the upper vagina and cervix can be done in the squatting posture while bearing down. There is evidence that it is also of value in lessening chances of infection.<sup>3</sup>

#### CONDOM

The condom is the effective mechanical measure most generally available in well-to-do countries. Among commercial contraceptive articles it is by far the most frequently used. Half of those who come to birth control clinics have employed it, and it is relied on to furnish about a fourth of the protection in the United States. It stands alone as a safeguard against venereal infection. The conclusion drawn from studies of all methods shows that it deserves a much more favorable place among the physician's birth control prescriptions than is generally accorded to it. It is suited to those males with good erection and with strength of feeling tolerating some numbing, to the man taking his share of the responsibility, to the wife careful to douche promptly should it slip off as he makes exit, or in case of break. Practice often lessens objection. Easy procurability is an important factor, as well as cheapness beyond any other means when each condom is used several times. The skin condom dampens sensation much less than the rubber but is much more expensive.

Lubrication with a nonfatty contraceptive jelly inside and out is desirable. As to quality, it has been raised to a high point by federal control through the Food and Drug Administration. Therefore there is less need of test for holes by air inflation, whereby distention to about 6 by 10 inches is effected with the ring or rim held between two digits, the thicker tip distending least.

#### WITHDRAWAL

Coitus interrupted just before ejaculation is the contraceptive measure most extensively employed the world over. Its advantages are simplicity and availability with absence of preparation or equipment and complete local contact. The man must have trained capacity for control until his wife has full orgasm or orgasms, without undue restriction of activity and with no sequel of nerve strain for either partner. Withdrawal is not suited to males unwilling to accept limitation of gratification or for the one man in eight who has quick emission or possibly the few with some sperms in the mucus at the meatus. Medical literature shows general but by no means universal condemnation of coitus interruptus, with reported cases of nervous disorders and pelvic congestions ceasing after discontinuance. Coitus reservatus, with orgasm for the woman only, is also credited by the urologists as a cause of pathologic changes in the prostate. In France, where coitus interruptus is especially utilized by peasants and laborers, among fifty-nine prominent medical men two thirds considered it harmless or probably harmless.

#### LACTATION

Two thirds of babies in the United States get partial or complete breast feeding. In the first three months of suckling three out of four mothers fail to menstruate, and half the mothers will not menstruate during the entire nursing period. Ovulation and conception can occur without return of periods. Until some simple self test for ovulation is discovered, protection by mechanical or chemical measures is in order.

#### ABSTINENCE

The risk of psychologic disturbances and antisocial substitutes for marital coitus precludes such prescription by the physician except for limited periods or for the spiritually ascetic, the frigid wife and the impotent husband.

## RHYTHM OR SAFE PERIOD

By avoidance of coitus during the few days in the monthly cycle close to ovulation, control of conception is possible. The difficulty is that there has not yet been discovered any simple means of determining the single day an ovum will receive one of the sperms, which can enter after lying in wait in the tube for about two days. Ovulation occurs about the fourteenth day before the next period is due, but the relative infrequency of regularity in menstruation makes all calculation complicated. Four fifths of all women vary five days or more in length of cycle some eight or nine days. Latz<sup>4</sup> outlines this "simplest" form of direction for birth control.

"By keeping records preferably a year of the exact dates and the hour when menstruation began the cycle is determined. If the variation does not exceed three or four days, twenty-six to thirty, she is ready to figure. She marks the thirtieth day on the calendar, counts back eleven days, then crosses off the eight days preceding. Thus the first nine days are sterile, the next eight fertile, the last eleven sterile. Next she figures on the twenty-six day possibility, counts back eleven days, then eight, and finds another figure twelve days fertile, and she avoids these. She will go on marking date and hour month by month thereafter and keep a written record." For each length of cycle such double calculation is needed. Any minor disturbance like a cold, a passing illness, a journey, a fright, an emotional storm, may disturb her cycle. "There is no absolute certainty, of course."

Thus about ten days preceding the period, the period itself and the few days close after it show low risk or none, but there are records of conception on every day of the cycle.

## INTRAUTERINE STEMS AND RINGS

The device most commonly worn continuously was a Y shaped gold plated wire placed within the cavity of the uterus with a disk outside the cervix. This can form a ladder for infection to climb. Misfit or excessive spread of the spring sometimes cuts into the lateral or posterior wall. Rings are of fine coiled silver wire or of a single coiled silkworm strand introduced within a capsule which melts. All are generally condemned because of a few deaths and some infection,<sup>1</sup> but systematic follow-up is lacking either for countries with very extensive employment or for our own.

## TEMPORARY IMMUNITY

Temporary immunity by hypodermic use of some constituent of semen offers as yet little hope of success. Temporary suspension of ovulation by irradiation is uncertain and involves risk of sterilization. Permanent arrest by x-rays applies only to patients with inoperable conditions, as of kidney, heart or lungs, and does not affect sex response unduly.

## STERILIZATION WITHOUT UNSEXING

Closure of the spermatic ducts or the uterine tubes has been done so extensively that one can declare that it does not bring about loss of satisfaction or desire. Its application has been almost entirely to that half of the adult feeble minded who elect it in order to return to self support as the alternative to life long segregation, and sterilization qualifies many psychotic persons to leave institutions. Vasectomy is done under local anesthesia with almost no absence from work. Salpingec-

tomy at present involves laparotomy and weeks of convalescence unless done under local anesthesia within hours or days after delivery.

## EFFECTIVENESS AND ACCEPTABILITY

Effectiveness and acceptability are two factors in appraisal of any measure which are nearly equally involved.

Degree of protection<sup>5</sup> means the reduction in frequency of conception when a given method is used, as compared with frequency found in the same group in the absence of precautions. Estimates are rendered difficult by the number of variables involved, such as correctness and consistency of patient usage and deductions for illnesses, absences and infertility during child bearing and nursing. Hardest to evaluate are skill or care in technic and the invariability of use. Reports are therefore quoted from average performances. Most of them refer to underprivileged groups.

With diaphragm and jelly the degree of protection can be expected to register prevention around 90 per cent, or from 85 to 95. For white collar, manual labor and relief groups in Cincinnati, effectiveness ran to 95, 92 and 85 per cent respectively, but the poor in Puerto Rico and Tennessee secured far less protection by this means. It figured above this best in private practice in Philadelphia, or one failure in sixteen hundred times of usage.

With the condom, protection ran up to 95 per cent but sometimes was as low as 70.

Withdrawal technic offers a longer range, from 35 to 80.

Of jelly or cream alone there has been insufficient study. An average may be above 80 per cent, between 70 and 90, but the range is wide.

For foam powders on sponges the figures are 55 to 95, with rather less favorable returns as time passes.

The douche has a variant score, all the way from 16 to 70.

There are no American data on the suppository, but English returns and usage encourage research in this field.

Acceptability presents wide variants and is a factor of weight. In urban private practice in expert hands, 70 per cent were continuing the use of diaphragm and jelly at the end of three years. In birth control clinics 50 per cent carry on with this means after two years, but as few as 30 per cent even in a fine service after three years. For jelly or cream alone continuance after two years ran from 63 to 15 per cent. The return is to previously used methods, such as condom and withdrawal. For the foam-sponge and the suppository insufficient or conflicting evidence is available bearing on long continued use.

## RESEARCH

Present methods of conception control are in large part beginnings, with no method accepted by all couples or to be guaranteed for all occasions. One of the most complex and difficult problems in the world, the optional defeat of that determined tendency to excess fertility which nature took millions of years to evolve and

<sup>5</sup> If expectation is 100 for example and the observed pregnancy rate 6 the degree of protection is here called 94 per cent. A pregnancy rate compares the number of conceptions with the number of months during which conception was possible. The latter is termed exposure to the risk of pregnancy. The expression  $\frac{100 \times \text{conceptions}}{\text{months of exposure}}$  is the usual pregnancy rate or the pregnancies per hundred women-years of exposure to the risk of conception. This rate is computed for special groups of women during defined types of experience and not for individual women.

<sup>4</sup> Latz L. J. The Rhythm of Sterility and Fertility in Woman ed 6 Chicago Latz Foundation pp 36 55 66 106 107

fortity—such a problem can look toward solution only when large funds back decades of systematic research on the details of the fundamentals of human reproduction

#### CRITERIA FOR ACCEPTABILITY OF CONTRACEPTIVE JELLIES AND CREAMS AND OF SYRINGE APPLICATORS AND NOZZLES

For guidance in reviewing contraceptive products, the Advisory Committee on Contraceptives of the Council on Pharmacy and Chemistry has proposed the following criteria. These have been adopted by the Council but it should be emphasized that they may be changed from time to time. As the experience of the committee and the Council grows, improvements may appear desirable.

1 The use of the word "contraceptive" need not be limited to materials which will prevent conception on every occasion of use.

2 Evidence shall be furnished that use of the material decreases the incidence of pregnancy. This evidence may be secured in connection with occlusive devices unless the manufacturer's advertising is directed chiefly toward the use of the jelly or cream without such devices.

3 Evidence shall be submitted that 100 or more couples have used the material on six or more occasions without subjective injury.

4 Evidence is desirable that 12 or more women have received vaginal applications of the recommended dosage on twenty-one successive days without subjective irritation or injury and without evidence of physical damage shown by a physician's speculum examination.

5 The quantitative formula from which the contraceptive mixture is prepared shall seem to the Advisory Committee to be safe and, presumably, effective.

6 The consistency shall be satisfactory to the committee. It shall not show separation into more liquid and more solid portions visible to the naked eye.

7 Evidence is desirable that the consistency is not substantially changed after storage for twelve months at 27 C.

8 The consistency shall be reasonably uniform from batch to batch.

9 The spermicidal time of the contraceptive material as measured by the method of Brown and Gamble (Human Fertil. 5:97 [Aug] 1940) with proportions of material, isotonic solution of sodium chloride and semen of 1:4:5 shall be thirty minutes or less as measured by the average of four or more tests.

10 The use of jellies or creams suggested by the manufacturer need not be limited to use in conjunction with an occlusive device.

11 If a syringe applicator or nozzle is furnished for use in connection with the jelly or cream, it shall be sufficiently translucent to permit the detection of air which might lead to inadequate dosage.

#### CRITERIA FOR ACCEPTABILITY OF CONTRACEPTIVE DIAPHRAGM OR CAP

1 The advertising and directions of the manufacturer should make it clear that contraceptive diaphragms are intended for use in conjunction with a spermicidal jelly or cream.

2 The manufacturer's advertising must not state or imply that the appropriate diaphragm can be chosen without the aid of a physician.

3 Evidence is desirable that the diaphragm will last for twelve months or more without perforations or other defects.

4 With each diaphragm should be packed directions warning user not to expose it to oils or greases, unless evidence is admitted that the material of which the diaphragm is made is damaged by these substances.

5 The design shall be satisfactory to the committee.

6 The directions packed with each diaphragm shall include instructions to the user to inspect the diaphragm from time to time for holes or tears and discard the diaphragm if one

(The following statement of actions and uses and dosages will appear in N. N. R. 1944)

#### CONTRACEPTIVE PREPARATIONS

When protection from pregnancy is considered advisable, contraceptives are used to prevent passage of active spermatozoa from the vagina into the uterus. This is accomplished mechanically by occlusive devices, such as diaphragms, which lengthen the route which the spermatozoa must travel to reach the os, thereby assuring extensive exposure to a spermicidal jelly or cream. Contraceptive jellies and creams act as chemical agents immobilizing the spermatozoa with which they come into contact. Because of their consistency they also have an obstructive function. Certain accessory devices are used with these, such as inserters and extractors for the diaphragms, and syringe applicators for the jellies and creams. In control of conception acceptability probably plays a greater role in the use and therefore the effectiveness of a prescription than in most fields of medicine. The esthetic block or reluctance toward various methods differs with different users, and variation of method by a single user is often found to lead to greater acceptability and consequently a higher degree of protection.

#### CONTRACEPTIVE JELLIES AND CREAMS

**Actions and Uses**—Jellies and creams for contraceptive use are introduced into the vagina usually with an occlusive diaphragm or cervical cap not more than twelve hours before sexual intercourse. They may also be used without an occlusive device, but this may result in a lower degree of protection. Some users find this technique definitely more acceptable, sufficiently so to outweigh the differential in fertility rate. When so used the jelly or cream is introduced into the vagina within an hour before intercourse by a syringe applicator. The recommended dose varies but is usually approximately 5 cc. To allow adequate time for chemical immobilization, the occlusive device should not be removed nor should a douche be taken within six hours after ejaculation.

As most of the contraceptive diaphragms are made of rubber, which will deteriorate if exposed to greases, the jellies and creams used should not contain greasy substances.

**Ortho-Creme** A nonfatty stearic acid cream having a pH of 6, prepared from the formula

Stearic acid	24.00%
Stearyl alcohol	0.50
Glycerin	7.00
Ricinoleic acid	0.75
Sodium lauryl sulfate	0.28
Boric acid	2.00
Perfume	0.05
Water to	100.00%

**Actions and Uses**—See preceding article, Contraceptive Jellies and Creams.

**Dosage**—5 cc

Manufactured by Ortho Products, Inc., Linden, N. J. U. S. Patent pending under serial number 360,665 Vaginal Creams U. S. trademark number 390,141

**Ortho-Gynol Vaginal Jelly** A water soluble jelly formed from tragacanth and acacia, having a pH of 4.5, prepared from the formula

Tragacanth	3
Acacia	0.5
Glycerin	5
Boric acid	3
Ricinoleic acid	0.75
Propyl ester of parahydroxybenzoic acid	0.05
Oxyquinoline sulfate	0.025
Perfume	0.025
Water to	100.00%

The consistency is indicated by a 55-60 mm dart penetration at 40 C when tested with the Braun dart penetrometer.

**Actions and Uses**—See preceding article, Contraceptive Jellies and Creams.

**Dosage**—5 cc

Manufactured by Ortho Products, Inc., Linden, N. J. U. S. Patent number 271,159 (October 5, 1943, expires 1960) U. S. trademark number 298,222

#### Contraceptive Diaphragms

**Actions and Uses**—As diaphragms cannot be designed to form a junction with vaginal wall or cervix which will prevent the passage of an organism of the size of a spermatozoon, a



spermicidal jelly or cream should be prescribed for use with them.

The appropriate size of diaphragm (varying from 50 to 105 mm in diameter) must be chosen for each user. It should be as large as is comfortable, large enough to extend easily over the cervix, anchoring posteriorly in the posterior fornix and anteriorly behind the symphysis. The appropriate size may change after a delivery and during the postpartum months. Satisfactory fitting is not possible in some cases of variant anatomy of the soft parts (this does not refer to bony structure).

The diaphragm and jelly or cream should be inserted before intercourse (not more than twelve hours before) and left in place until six hours or more after ejaculation (not more than thirty-six hours). Rubber diaphragms should not be exposed to fatty substances and should be inspected from time to time for holes or tears.

**Ortho Diaphragms** Latex rubber diaphragms covering a circular coiled spring, the external diameter varying in gradations of 5 mm from 55 to 90 mm.

Manufactured for Ortho Products Inc. Linden N. J. U. S. Trade-mark number 387 080.

### SYRINGE APPLICATORS FOR CONTRACEPTIVE JELLIES AND CREAMS

**Uses**—Applicators are designed for ready filling from the container of contraceptive jelly or cream and for delivery under moderate pressure of the recommended dose (usually 5 cc.) into the upper vagina. They should be transparent, to permit detection of air which might lead to inadequate dosage, and, if made of glass, should be sufficiently thick walled to make breaking while in the vagina extremely improbable. The end should be blunt, and sufficiently large to prevent entry into the urethra.

**Ortho Vaginal Applicator** A transparent plastic syringe threaded at the blunt, intravaginal end, to screw onto the tubes of Ortho-Gynol Vaginal Jelly or Ortho-Creme, to permit filling by compression of the tube. The full capacity is 5 cc., the recommended dose.

Manufactured by Ortho Products Inc. Linden N. J. Registration of the trademark Ortho for measured dose applicator was issued by the U. S. Patent Office May 5 1942.

**Ramses Vaginal Applicator** A transparent plastic tube, threaded at the blunt intravaginal end to screw onto the tubes of Ramses Jelly to permit filling by compression of the tube. A short plastic cylinder fitting inside the tube permits air pressure from a detachable bulb to expel the jelly. The full capacity is 5 cc., the recommended dose.

Manufactured by Julius Schmid Inc., New York U. S. Patent number 2,252 212.

### CONTRACEPTIVE DIAPHRAGM INSERTERS

**Uses**—Inserters are designed to stretch the circular spring of a contraceptive diaphragm into a long oval and to furnish a handle with which it may be inserted into the vagina and guided beyond the cervix. To some users they have the esthetic appeal that they minimize digital contact with jelly or cream, or genitals.

**Ramses Diaphragm Introducer** A transparent plastic device designed to stretch and hold for insertion a diaphragm of a given size. Made in different sizes marked for diaphragms from 50 to 90 mm in diameter in gradations of 5 mm. On the handle end is a blunt hook to assist in extracting the diaphragm.

Manufactured by Julius Schmid Inc. New York U. S. Patent number 2 252 212 U. S. Trademark number 353 028.

### CONTRACEPTIVE FITTING RINGS

**Uses**—To enable the physician to test the size of contraceptive devices needed for a given patient, circular coiled springs of the various sizes have been prepared without the thin rubber diaphragm. As these have thick rubber coatings, repeated sterilization by boiling is possible without deterioration.

**Ramses Fitting Rings** Prepared in sets having sizes from 50 to 90 mm in diameter in gradations of 5 mm.

Manufactured by Julius Schmid Inc. New York.

## NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

**MENADIONE** (See New and Nonofficial Remedies, 1943, p. 619)

The following dosage form has been accepted  
**GEORGE A. BREON & COMPANY, INC., KANSAS CITY, MO.**

Tablets Menadione 2 mg

**THE UPJOHN COMPANY, KALAMAZOO, MICH.**

Menadione (in oil) 1 mg per cc. 10 cc and 50 cc vials

Capsules Menadione 1 mg

**STAPHYLOCOCCUS TOXOID** (See New and Nonofficial Remedies, 1943, p. 549)

The following dosage form has been accepted

**PITMAN-MOORE CO., INDIANAPOLIS**

Staphylococcus Toxoid 5 cc vials containing in each cubic centimeter the toxoid derived from one necrotizing dose of toxin. Preserved with 1:10,000 merthiolate.

**DIETHYLSTILBESTROL** (See New and Nonofficial Remedies, 1943, p. 403)

The following additional dosage form has been accepted

**ELI LILLY AND COMPANY, INDIANAPOLIS**

Ampules Diethylstilbestrol (in cottonseed oil), 0.25 mg per cc. 1 cc.

**SODIUM DEHYDROCHOLATE** (See New and Nonofficial Remedies, 1943, p. 324)

The following product has been accepted

**ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.**

Ampoules Solution of Sodium Dehydrocholate 20% W/V. 3 cc. and 10 cc.

**ESTROGENIC SUBSTANCES** (See New and Nonofficial Remedies, 1943, p. 401)

The following dosage forms have been accepted

**GEORGE A. BREON & CO., INC., KANSAS CITY, MO.**

Ampul Solution of Estrogenic Substances (in oil) 1 cc. and 10 cc. rubber stoppered vials. Each cubic centimeter contains 2,000 international units of estrogenic substance.

**THE SMITH-DORSEY COMPANY, LINCOLN, NEB.**

Ampul Solution of Estrogenic Substances (in sesame oil) with Benzyl Alcohol 3% 1 cc. Size containing the equivalent of 2,000 I. U. per cc., 5,000 I. U. per cc. and 10,000 I. U. per cc. of estrone.

Ampul-Vial Solution of Estrogenic Substances (in sesame oil) with Benzyl Alcohol 3% 10 cc. Each cubic centimeter contains the equivalent of 10,000 international units of estrone.

**NICOTINIC ACID** (See New and Nonofficial Remedies, 1943, p. 596)

The following additional dosage form has been accepted

**AMERICAN PHARMACEUTICAL CO., INC., NEW YORK**

Tablets Nicotinic Acid 50 mg

**VIOFORM** (See New and Nonofficial Remedies, 1943, p. 121)

The following additional dosage form has been accepted

**CIBA PHARMACEUTICAL PRODUCTS, INC., SUMMIT, N. J.**

Vioform Insufflate 1 ounce bottles

**POSTERIOR PITUITARY INJECTION** (See New and Nonofficial Remedies, 1943, p. 424)

The following dosage form has been accepted

**WILLIAM R. WARNER & CO., INC., NEW YORK**

Ampuls Posterior Pituitary 1 cc., 5 mg

**ACRIFLAVINE** (See New and Nonofficial Remedies, 1943, p. 111)

The following additional dosage form has been accepted

**ABLOTT LABORATORIES, NORTH CHICAGO, ILL.**

Tablets Acriflavine 0.1 Gm.

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SATURDAY, DECEMBER 18, 1943

## MOSQUITO TRANSMISSION OF ENCEPHALITIS

Successful laboratory transmission of St Louis encephalitis virus by several species of mosquitoes has been accomplished by Hammon and Reeves,<sup>1</sup> of the Hooper Foundation, University of California. They have demonstrated also a symptom free viral septicemia in domestic fowls as an essential prerequisite for transmission by the mosquito.

During the summer of 1941 a study was made of the possible role of arthropods in the annually recurring epidemics and epizootics of encephalitis in the Yakima Valley, Washington. About 50 human cases and an equal number of equine cases occur each year in this valley. Over 15,000 living arthropods were collected and identified in this survey. These included 12,500 mosquitoes of four different genera and about 3,000 domestic flies, black flies, ticks, mites, gnats, horse and deer flies, bedbugs and other insects. These were immediately frozen and transported by air express to the central laboratory in San Francisco. Pools of from 75 to 100 arthropods of the same species were thoroughly ground and emulsified in 30 per cent sheep serum-salt solution. The resulting emulsions were centrifuged free from visible particles and most bacteria, and the clear supernatant fluid was inoculated intracerebrally into 21 day old Swiss mice.

Inoculations showed that eight mosquito pools contained either the St Louis or the western equine encephalitis virus in infectious concentration. All the positive emulsions were from *Culex tarsalis*, and virus was not isolated from other species of mosquitoes or from other arthropods. It was estimated that 1 out of every 286 *C. tarsalis* mosquitoes caught during this period was a carrier of encephalitis virus. Final identification of the virus was made by specific neutralization tests.

1 Hammon, W. M., and Reeves, W. C. Laboratory Transmission of St Louis Encephalitis Virus by Three Genera of Mosquitoes, *J. Exper. Med.* 78: 241 (Oct.) 1943.

2 Hammon, W. M., Reeves, W. C., Brookman, B., Izumi, E. M., and Gjullin, C. M. Mosquitoes and Encephalitis in the Yakima Valley, Washington. *J. Infect. Dis.* 70: 263, 267, 278 (May-June) 1942.

This survey was supplemented by a study of the serums of wild and domestic animals in the same region and in neighboring noninfected areas.<sup>3</sup> By means of specific neutralization tests 576 serums representing seventy-four animal species were examined. Approximately 50 per cent of the serums from domestic fowls (chickens, ducks, geese, pigeons, turkeys) would neutralize one or both strains of encephalitis virus. Among the wild birds of the valley only about 20 per cent were positive. Thirty-five per cent of the serums of domestic mammals were positive, contrasted with 8 per cent positive among the wild mammals of the same region. The conclusion was drawn that domestic fowls probably serve as the main reservoir for the infection of mosquitoes.

Whether or not mosquitoes could play an important part in the spread of this infection would depend on their power to transfer the virus in infective doses during their subsequent feeding on wild or domestic birds or mammals. Hammon selected a strain of St Louis encephalitis virus originally isolated from infected mosquitoes and inoculated into 4 to 8 week old chickens and ducks as the experimental animals. Preliminary tests had shown that these birds may be infected subcutaneously with minute doses of this virus. Following such inoculation the fowls rarely showed visible manifestations of disease. From twenty-four to forty-eight hours later, however, the serums of these birds became highly infectious for intracerebrally inoculated Swiss mice. The development of a viral septicemia or "viremia" in mosquito bitten fowls, rather than manifest symptoms, therefore, was taken as the criterion for successful insect transmission.

Mosquitoes of various species were then allowed to feed on chickens or ducks, forty-eight hours after experimental subcutaneous inoculation. Following this infective meal all mosquitoes were held at a temperature averaging 80 F or above in a room of a high relative humidity simulating the usual summer conditions in the regions under investigation. During this period the mosquitoes were allowed to feed on cotton soaked with sugar water. From two to twenty days later the presumably infected mosquitoes were allowed to feed on new experimental animals. Forty-eight hours after this feeding, blood was drawn from the fowls by cardiac puncture and 0.03 cc of the resulting serum injected intracerebrally into Swiss mice. Each fowl was again bled on the fifteenth day and its serum tested for neutralizing antibodies.

The St Louis encephalitis virus was successfully transmitted by this technic to fowls by nine species (three genera) of mosquitoes, of which *Culex tarsalis* is apparently most important. Survival of the virus for more than a few days was also shown to occur in

3 Hammon, W. M., Lundy, H. W., Gray, J. A., Evans, F. C., Bang, F. B., and Izumi, E. M. A Large Scale Serum Neutralization Survey of Certain Vertebrates as Part of an Epidemiological Study of Encephalitis of the Western Equine and St Louis Types, *J. Immunol.* 44: 75 (May) 1942.

four other species. With *Culex tarsalis* the power of infection develops after an extrinsic incubation period of four days and persists for at least twenty days. With *Theobaldia moranata* the minimum and maximum periods were eight and twenty-two days, respectively, with *Culex coronatis*, eight and ten days, and with *Aedes lateralis*, four and eight days.

From these and other data Hammon concludes that *Culex tarsalis*, *Culex pipiens* and several less common species of mosquitoes assume a major role in the spread of encephalitis virus in our Western states. Other presumably minor methods of spread are, of course, not excluded.

### THIAMINE DEFICIENCY IN HYPERTHYROIDISM

Experimental or spontaneous hyperthyroidism increases the rate of cell metabolism and thus leads to a higher requirement of essential factors involved in the breakdown and resynthesis of metabolites. Among these factors the important role of thiamine is well established. The phosphorylated form of thiamine, diphosphothiamine or cocarboxylase, serves as prosthetic group for the enzymes concerned with the oxidation, carboxylation, decarboxylation, dismutation and condensation of pyruvic acid. Pyruvic acid is an obligatory intermediary in the normal pathway of carbohydrate breakdown and probably in the interconversion of protein, fat and carbohydrate. Conditions that lead to increased cellular metabolism and therefore to increased requirements for essential factors tend obviously to produce a relative deficiency of thiamine.

In 1937, when methods became available for the determination of thiamine in the tissues, Drill<sup>1</sup> confirmed this concept of thiamine deficiency. The livers and kidneys of rats receiving 100 mg of desiccated thyroid gland daily contained less thiamine than those of normal controls, even when the hyperthyroid animals were given 500 micrograms of thiamine daily in addition to the basic diet. This work was confirmed further by Peters and Rossiter,<sup>2</sup> who found that the cocarboxylase content of the tissues of hyperthyroid rats was intermediate between that of normal animals and that of animals frankly deficient in thiamine.

Although this relative deficiency seldom produces the complete picture observed in experimental deficiency of thiamine, it is important in the production of the variegated symptomatology of experimental and clinical hyperthyroidism. Before the isolation of thiamine, Cowgill and his group<sup>3</sup> observed that normal dogs fed a yeast free diet developed anorexia and loss

of weight after thirty-two days, whereas thyroxine treated dogs on the same diet developed the same symptoms after only seventeen days. In both groups of animals anorexia and loss of weight could be prevented or corrected by the addition of vitamin B complex to the diet. These experiments were repeated by Sure and Buchanan<sup>4</sup> in 1937 with synthetic thiamine. They observed that the administration of 30 to 100 micrograms of thiamine in rats counteracted the loss of weight caused by so high a daily dose as 0.2 mg of thyroxine. Anorexia and loss of weight are not the only symptoms in hyperthyroidism caused or accentuated by the associated thiamine deficiency. This deficiency was shown to be responsible for other common symptoms in experimental hyperthyroidism. Abelin and his associates<sup>5</sup> in 1930, using yeast, and Drill and Hays<sup>6</sup> in 1942, using synthetic thiamine, showed that these factors prevent the loss in liver glycogen produced in rats and dogs by the administration of thyroid or thyroxine. A high vitamin B diet in thyroxine treated dogs delays the appearance of liver damage as determined by the bromsulphalein test. Also the pulse rate and the temperature in experimental thyrotoxicosis are influenced by the amount of thiamine in the diet.<sup>6</sup>

There is a striking resemblance between some of the clinical features of hyperthyroidism and thiamine deficiency. Anorexia, diarrhea, constipation, hypochlorhydria and achlorhydria, tachycardia, enlargement of the heart, dyspnea, palpitation, edema, fatigue, muscular pains, lowered muscular strength, neurasthenia, neuritis and disturbances in carbohydrate metabolism frequently occur in both conditions. Hence the administration of a high vitamin B diet and thiamine became a common practice in many clinics devoted to the care of those with disturbances of the thyroid. Subjective improvement associated with gain in weight, increased appetite and decrease in tachycardia has been reported by Frazier and Ravdin<sup>7</sup> in the preoperative treatment of hyperthyroidism after the administration of 1 to 15 mg of thiamine daily. Means and his group<sup>8</sup> have observed a similar beneficial effect of thiamine in the medical treatment of hyperthyroidism. However, definite proof for the occurrence of thiamine deficiency in hyperthyroid patients has only recently been provided by the work of Williams and his co-workers<sup>9</sup>. Pyruvic acid is poorly utilized in thiamine deficiency, this forms an accepted basis for the

<sup>1</sup> Sure, Barnett and Buchanan, K. S. Antithyrogenic Action of Crystalline Vitamin B<sub>1</sub>. *J. Nutrition* 13: 513 (May) 1937.

<sup>2</sup> Abelin, I., Knechel, M. and Spichtin, W. Ernährung und Schilddrüsenwirkung über die Bedeutung der Vitamine für den Verlauf der experimentellen Hyperthyreose. *Biochem. Ztschr.* 228: 189 (1930).

<sup>3</sup> Drill, V. A. and Hays, H. W. Studies on the Relation of the Liver Function, Pulse Rate and Temperature of Hyperthyroid Dogs to Vitamin B<sub>1</sub> and Yeast. *Am. J. Physiol.* 130: 763 (July) 1942.

<sup>4</sup> Frazier, W. D. and Ravdin, I. S. The Use of Vitamin B<sub>1</sub> in the Preoperative Treatment of the Hyperthyroid Patient. *Surgery* 4: 650 (Nov.) 1938.

<sup>5</sup> Means, J. H., Hertz, Saul and Lerman, Jacob. Nutritional Factors in Graves Disease. *Ann. Int. Med.* 11: 429 (Sept.) 1937.

<sup>6</sup> Williams, R. H., Egana, Enrique, Robinson, Paul, Asper, S. P. and Dutoit, Charles. Alterations in Biologic Oxidation in Thyrotoxicosis. I. Thiamine Metabolism. *Arch. Int. Med.* 72: 353 (Sept.) 1943.

<sup>1</sup> Drill, A. V. The Effect of Experimental Hyperthyroidism in the Vitamin B<sub>1</sub> Content of Some Rat Tissues. *Am. J. Physiol.* 122: 486 (May) 1938.

<sup>2</sup> Peters, R. A. and Rossiter, R. J. Thyroid and Vitamin B. *Biochem. J.* 33: 1140 (July) 1939.

<sup>3</sup> Hilmwich, H. E., Goldfarb, W. and Cowgill, G. R. Studies in the Physiology of Vitamins. Effect of Thyroid Administration on Anorexia (Characteristic of Lack of Undifferentiated Vitamin B). *Am. J. Physiol.* 80: 659 (Feb.) 1932.

clinical demonstration of deficiency of thiamine. Almost all of a group of 40 thyrotoxic subjects exhibited high pyruvic acid blood levels. During a period of four hours following the intravenous injection of 50 Gm of dextrose or 5 Gm of sodium pyruvate, the pyruvic acid which appeared in the blood was less quickly disposed of in thyrotoxic patients than in normal controls. This decreased utilization of pyruvic acid was associated with a low blood level of free and phosphorylated thiamine. Pyruvic acid utilization became normal following administration of diphosphothiamine.

As many vitamins and similar essential factors have been shown to be involved in enzyme systems governing biologic oxidations, one might expect a multiple deficiency of these factors in conditions in which prolonged increased metabolic activity is a feature, such as hyperthyroidism. That this is true was shown by Drill and Overman,<sup>10</sup> who demonstrated in experimental hyperthyroidism that some deficiency symptoms did not disappear completely after administration of thiamine alone but that they did disappear on addition of pantothenic acid and pyridoxine.

The importance of these observations is self evident not only for more adequate treatment of thyrotoxic patients but also for a better understanding of the mechanisms underlying the variety of disturbances associated with hyperthyroidism.

### Current Comment

#### ASPIRATION STUDIES ON THE LIVER IN ACUTE HEPATITIS

The results of the studies of the liver in acute hepatitis or infectious jaundice by means of aspiration biopsy made by Roholm and Iversen<sup>1</sup> have been confirmed and the work extended by Dible, McMichael and Sherlock.<sup>2</sup> Biopsies of the liver were done in 56 cases of acute hepatitis including, besides the epidemic, instances of hepatitis following arsenotherapy and the injection of human serum. Differences were not apparent in the microscopic changes in the liver in the cases examined. The aspirations were made with a 2 mm bore cannula inserted transpleurally into the right lobe of the liver. This method is not without danger from hemorrhage, especially when jaundice is present. The essential lesions in the liver were degenerative, necrotic and autolytic changes in the liver cells, especially in the centers of the lobules, with leukocytic infiltration and histiocytic proliferation in the periportal tissues. These are the basic lesions. They may be more or less limited or diffuse with loss of the lobular patterns. The process may terminate in complete restitution, in acute or subacute necrosis

("atrophy"), in mild fibrosis or in cirrhosis. There was no evidence of bile stasis from plugging of the ducts in the papilla of Vater, as claimed to be the case in "catarrhal jaundice" in the old sense. The fact that the lesions in the liver are similar in epidemic or infectious hepatitis and in hepatitis following arsenotherapy or injection of human serum or plasma does not necessarily mean a common causation for these processes. While the cause of epidemic hepatitis remains unknown, its infectious and communicable nature can hardly be questioned. The results of the Danish and British studies of biopsies of the liver appear to establish clearly the effects on the liver in epidemic hepatitis. In view of the nature of these effects and their possible consequences, special attention must be given to the prevention of the disease. Its natural spread seems to depend mainly on contact

#### RAPID ACCLIMATIZATION TO WORK IN HOT CLIMATES

During the winter season Robinson and his co-workers<sup>1</sup> at the Fatigue Laboratory of Harvard University carried out experiments in which five men walked on a motor driven treadmill from one to one and a half hours a day in a room in which desert conditions were simulated. The purpose of these observations was to determine the rate and degree of adjustment to hot climates. An artificially heated room, where the temperature was about 104 F and the humidity 23 per cent, was employed. The men walked on a motor driven treadmill at a rate of 3½ miles an hour on a grade of 56 per cent (one walked on a grade of 4 per cent). During all experiments the men wore standard Army summer clothing. Pulse rates were determined by palpation, rectal temperatures by clinical thermometers and skin temperatures by four thermocouples respectively located on the chest, back, thigh and upper arm. The rate of water loss was determined by weighing in the nude before and after work. Oxygen intake was determined once for each experiment by collecting and measuring the expired air and analyzing samples in the Haldane apparatus. All but the one man who walked on the lower grade approached heat exhaustion in the early experiments, this being manifest by high skin temperatures, rectal temperatures of 103 to 104 F and heart rates averaging 178 beats per minute during the last twenty minutes of work. The daily walks were continued for twenty-three days. The comparable heart rates of the men declined from the average of 178 at the beginning to 155 on the seventh day. The average skin temperature of the men at the end of the work experiments declined from 98.4 to 96.5 F and of the rectal temperature from 103.4 to 101.7 F during the same period. About 80 per cent of improvement noted was found to have occurred in the first seven days of exposure. In 3 of the 5 subjects in the study, furthermore, the efficiency in the standard hot room experiments declined only slightly as late as two to three weeks after stopping the exposure to acclimatization. It is noteworthy, the Boston investigators comment, that acclimatization

<sup>10</sup> Drill, V. A., and Overman, Richard. Increased Requirement of Pantothenic Acid and Vitamin B<sub>6</sub> During Experimental Hyperthyroidism, *Am. J. Physiol.* 135: 474 (Jan.) 1942.

<sup>1</sup> Roholm, K., and Iversen, P. Changes in the Liver in Acute Epidemic Hepatitis (Catarrhal Jaundice) Based on 38 Aspiration Biopsies, *Acta path. et microbiol. Scandinav.* 16: 427, 1939. *Problems of Infectious Jaundice*, editorial, *J. A. M. A.* 122: 1184 (Aug. 21) 1943.

<sup>2</sup> Dible, J. H., McMichael, John, and Sherlock, S. P. V. Pathology of Acute Hepatitis. Aspiration Studies of Epidemic, Arsenotherapy and Serum Jaundice. *Lancet* 2: 402 (Oct. 2) 1943.

<sup>1</sup> Robinson, S., Turrell, E. S., Belding, H. S., and Horvath, S. M. *Am. J. Physiol.* 140: 168 (Nov.) 1943.

occurs so rapidly, that such a short period (one to one and a half hours) of daily periods of work in the heat are needed to produce acclimatization, that adjustment to heat is retained for such a long time after exposure has ceased and that the acclimatization is so complete. These observations are of immediate practical importance to the armed forces and to industry. Men who are already in good physical condition can be expected to work effectively within a few days after they start in a hot climate, or they can be prepared for such work by a few relatively short daily exposures in artificially heated rooms. Additional experiments, these investigators point out, are needed in order to determine whether it may not be possible to achieve even more rapid acclimatization by shorter, harder, more frequent work periods in heat or by prolonging the daily periods of such work.

#### HYPERSENSITIVITY FROM INHALATION OF ATOMIZED FLUID ANTIGENS

Inhalations of finely atomized specific antiserum have been suggested for the prevention and treatment of influenza. A possible hazard of this experimental procedure has just been recorded by Hopps and Moulton.<sup>1</sup> Their report is based on tests made with five antigens (nonhomologous) on guinea pigs and rabbits. The animals were placed in a closed chamber and exposed for twenty minutes to finely atomized particles of the various serums. By the third of the three weekly exposures many mild reactions were observed. By the fifth week of such treatment allergic reactions were severe. Several of the sensitized animals died in the chamber during exposure to the atomized specific antigen. Since serious allergic reactions and fatal anaphylactic shock have occurred in animals from a procedure which has been suggested for human beings, further human studies should be pursued with great caution. Routine use of aerosols of this nature is not now desirable.

#### FATAL ACCIDENTS FROM "DORYL"

Deaths have recently been reported following the parenteral use of a crystalline preparation intended only for ophthalmologic use "Doryl" (carbamylcholine chloride) is a synthetic derivative of choline, available in the form of the chloride salt as a parasympathomimetic agent. It is available as a solution in ampules for intramuscular injection and as crystals for use in preparing solutions for the eye. Because the crystals also have been marketed in ampules, errors have been made in preparing these crystals for injection rather than using the available ampule solution for intramuscular use. The deaths which followed injection were due to the fact that the concentration was several hundred times greater than it should have been. After the first death the firm's attention was drawn to the confusion existing because of two different forms in ampules. Changes apparently were made in the labeling, and the ampule containing the crystalline form

was changed to a screw-cap vial, a type of package seldom if ever employed for preparations for parenteral use. In spite of these changes at least two deaths have occurred. The firm has now asked all hospital pharmacies and drug wholesalers to return for exchange all packages of Doryl substance shipped prior to Oct 1, 1943, irrespective of whether the goods on hand are of the ampule or of the newer screw-cap vial package type. Physicians should examine carefully their own supplies to prevent further accidents.

#### GRADUATE CONTINUATION COURSES FOR PRACTICING PHYSICIANS

In accordance with its plan of supplying advance information concerning graduate continuation courses, the Council on Medical Education and Hospitals presents lists of such courses elsewhere in this issue. The lists include courses in a wide variety of subjects offered at some time during the period Jan 1, 1944 to June 30, 1944. This material has proved useful to physicians seeking opportunity for postgraduate work. Physicians called on to assume new responsibilities because of the war and physicians who are returning to practice may find here listed courses which will be of help to them. Since many of the classes are necessarily limited, those who contemplate enrolling in any of these courses are urged to communicate as early as possible with the proper executive officer. Institutions offering continuation courses are invited to announce such courses in these semiannual lists compiled by the Council on Medical Education and Hospitals.

#### STREPTOTRICHIN—ANTIBACTERIAL SUB- STANCE FROM A SOIL FUNGUS

Many forms of actinomycetes or ray fungi, widely distributed organisms, produce antibiotic substances of varying nature and action. Of these substances streptotrichin has been found to be the least toxic and to have antibacterial powers. It is a metabolic waste product of a soil fungus (*Actinomyces lavendulae*) from cultures of which it can be obtained in aqueous solution.<sup>1</sup> Waksman and his associates have demonstrated that a salt free purified streptotrichin has selective bacteriostatic effect on gram negative as well as gram positive bacteria, including *Bacterium shigae*. They have shown also that streptotrichin acts on *Brucella abortus* in vivo,<sup>2</sup> in chicken embryo and in guinea pigs. In guinea pigs the effect suggested that streptotrichin might prove to be of value in the treatment of brucella infections. In view of its low toxicity and of its action in vivo on pathogenic bacteria Waksman places streptotrichin as the fourth in order of discovery of antibiotic substances with possibilities of practical application of which penicillin so far is the most striking example. The other two substances in this group are pyocynase and tyrothricin. Further developments in the investigation of antibiotic substances will be of great interest.

1 Hopps, H. C. and Moulton Stanley. Active Hypersensitivity from Inhalation of Finely Atomized Fluid Antigens. *Proc. Soc. Exper. Biol. & Med.* to be published.

1 Waksman, S. A. Production and Activity of Streptotrichin. *J. Bact.* 46: 299 (Sept.) 1943.

2 Metzger, H. J., Waksman, S. A. and Pugh, L. H. In vivo Activity of Streptotrichin Against *Brucella abortus*. *Proc. Soc. Exper. Biol. & Med.* 51: 251 (Nov.) 1943.



# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## TROPICAL DISEASES IN RETURNING MILITARY PERSONNEL

[NOTE—The publication of this statement has been requested by the Subcommittee on Tropical Diseases of the National Research Council. The statement has the approval of the Division of Medical Sciences, National Research Council, and of the Surgeons General of the Army, Navy and Public Health Service.—ED.]

The military forces of the United States operating in tropical and subtropical areas are exposed to a number of diseases which occur only in those areas or are much more prevalent there than in this country. Some of these diseases will be brought back to this country in returning military personnel and may be seen by civilian practitioners of medicine either in persons infected abroad or in persons to whom the diseases have spread from the original cases. It is important that physicians be familiar with the diseases which may be imported, and that they be on the alert to diagnose and treat them correctly and to prevent their spread.

### MALARIA

Malaria is the most important of these diseases. In most tropical regions *Falciparum malaria*,<sup>1</sup> the severe form of the disease, predominates. *Vivax malaria* is also common. *Malariae malaria* is relatively rare, and *ovale malaria* is very rare. Neither quinine nor atabrine prevents malarial infection. Suppressive treatment, formerly incorrectly termed 'drug prophylaxis,' will usually prevent clinical symptoms and keep infected persons on their feet as long as they continue such treatment, but many of them come down with clinical malaria within a few weeks after stopping treatment. Such cases are more likely to be caused by *Plasmodium vivax* than by *Plasmodium falciparum*. *Vivax malaria* is prone to relapse several times even after supposedly adequate courses of treatment. Some military and civilian personnel, returning to this country by air, become infected while stopping in highly malarious areas en route. These persons have their first attack of malaria, usually *falciparum* infection, after arriving in this country. The symptoms may be obscure and the disease not suspected, and coma or even death may ensue before the diagnosis is made.

Malaria should be suspected in every person returning from the tropics or subtropics. The disease may simulate almost any acute or chronic abdominal condition, upper respiratory or pulmonary conditions, meningitis, encephalitis, coma from other causes, or primary or secondary anemia. Blood examination should be made as soon as the patient is seen, using both thin and thick smears in order to afford the best chance of finding parasites. Species identification should be made by a competent technician, and the

disease should not be excluded until several blood examinations have been made at intervals of six to twelve hours. Vigorous treatment must be instituted promptly to avoid fatalities and to diminish the incidence of relapses.

It is possible that local outbreaks of malaria may occur in this country, starting from relapsing cases acquired abroad. The United States Public Health Service recognizes this possibility, is already cooperating with certain states in intensive anti-mosquito programs and is prepared to act vigorously if epidemics occur. Physicians can cooperate in avoiding such occurrences by the early diagnosis and reporting of cases, by adequate treatment and by preventing access of mosquitoes to infected patients. Attention is directed to Circular Letter 153 from the Office of the Surgeon General of the Army, dealing with the treatment of malaria. It was published in THE JOURNAL September 25, pages 205-208.

Individuals without clinical malaria but in whose blood malarial parasites are found should be treated immediately or kept under careful observation.

### DYSENTERY

Bacillary dysentery is usually an acute disease but may become chronic or give rise to carriers. Although the use of sulfonamide drugs will undoubtedly diminish the probability of chronic or carrier conditions, a history of the disease in military personnel should lead the physician to keep it in mind. The cause of chronic diarrhea or any vague abdominal symptoms should be investigated bacteriologically. Transient or chronic carriers of dysentery bacilli are usually present among the contacts of cases. Cultures should be taken from cases and contacts, preferably by the rectal swab technique, and persons found positive should receive sulfonamide treatment in order to avoid the development of active symptoms or further spread of the infection.

Amebic dysentery, or amebiasis, is much more likely than bacillary dysentery to become chronic or to recur in acute or subacute episodes. It may result in liver abscess even without previous noticeable symptoms. Possibly strains of *Endamoeba histolytica* from the tropics are more pathogenic than those from temperate zones. The incubation period may be very long, or infections acquired in the tropics may produce no symptoms in the initial patient but may be responsible for family or community epidemics under conditions of bad sanitation or contamination of water supplies. Clinically amebiasis should be suspected in any person returned from the tropics who complains of blood in the stools, alternating diarrhea and constipation or vague abdominal symptoms. Diagnosis, however, must be made by a technician competent to differentiate *Endamoeba histolytica* from the other intestinal protozoa and from body cells.

<sup>1</sup> In the interest of more accurate diagnosis and better treatment, physicians are urged to use the etiologic terminology in differentiating the four malaria infections of man as follows: *falciparum malaria* (instead of estivoautumnal), *subtertian*, *malignant tertian*, *tropical or pernicious malaria*), *vivax malaria* (instead of tertian or benign tertian malaria), *malariae malaria* (instead of quartan malaria) and *ovale malaria*.

## FILARIASIS

Filariasis, caused by *Wuchereria bancrofti*, the lymphatic filarial worm of man, is prevalent in many parts of the tropics, particularly in certain islands of the Southwest Pacific. It is transmitted by a number of species of mosquitoes, the most important of which are probably *Culex quinquefasciatus* and *Culex pipiens*, the common night biting mosquitoes of both hemispheres. The incubation period of the disease is usually six months or longer, and its first manifestation is acute lymphangitis or lymphadenitis before the worms become mature and before the larvae appear in the blood. It is not known whether the lymphangitis is caused by the worms themselves or by a secondary hemolytic streptococcus infection. There is no specific treatment for the worm, but sulfonamides sometimes relieve the lymphangitis, at least temporarily.

Cases of this infection have been acquired by military personnel. In the absence of an effective chemotherapeutic agent infected individuals may be discharged from military service and have subsequent attacks of lymphangitis. Or microfilariae may be found in the blood after several months or years even without the ultimate development of elephantiasis or other obstructive manifestations. Other infected individuals may be discharged from military service during the incubation period and come under civilian medical care during their first attack of lymphangitis. The possibility of the establishment of endemic foci in this country must be kept in mind, but this is improbable because a high local incidence of infection and many

mosquitoes are necessary for this to occur. The only endemic area in the United States, that around Charleston, S C, has apparently disappeared with the improvement in mosquito control.

## OTHER DISEASES

The other diseases which may possibly be brought into the continental United States by returning military personnel are visceral and cutaneous leishmaniasis, schistosomiasis, the filarial worms *Loa loa* and *Onchocerca*, African trypanosomiasis, leprosy, relapsing fever and various fungous diseases of the skin. The probability that new endemic areas of any of these diseases will become established in the United States is very slight. They should, however, be recognized clinically and etiologically by the medical profession.

## RECOMMENDATIONS

It is recommended that physicians and health departments prepare themselves for the diagnosis, treatment and control of disease brought back by returning military personnel. Physicians can cooperate by providing themselves with a modern textbook on tropical medicine, by keeping these diseases in mind and by reporting them to public health authorities as soon as a diagnosis is made. State and local medical societies can aid by devoting programs to this field. Health departments can cooperate by obtaining special instruction in tropical medicine and parasitology for their laboratory personnel and epidemiologists, and by keeping local practitioners informed of new developments or hazards.

## CIVILIAN DEFENSE

## MANUAL ON RESCUE TECHNIC

"A Technical Manual for the Rescue Service" was recently issued by the rescue section of the medical division of the Office of Civilian Defense, Washington D C, in which methods of rescuing persons trapped in buildings demolished by high explosive bombs or in wreckage caused by other types of disasters are described.

The manual provides a guide for the organization of the rescue service, its operation in disaster and plans for training. It is explained that the rescue service in the U S Citizens Defense Corps is a specialized service primarily developed for the rescue of persons from demolished buildings in which fire is under control or no fire has occurred. Since the great conflagrations caused by incendiary bombs require the entire personnel and equipment of the fire service, firemen cannot be spared to dig into ruins for persons buried in debris, the introduction points out.

Most of the manual is devoted to a detailed presentation of actual rescue techniques, describing how buildings collapse, the various stages of rescue, methods of locating casualties and how to reach them. Directions are given for clearance of debris, for trenching and tunneling through ruins of buildings and for shoring and demolition. A chapter describes the use of ladders, ropes and lashing. Other chapters present specific instructions on rescue in the presence of common gases such as utility gases, sewer gas and refrigerants, and on the special methods necessary in rescuing persons from areas in which war gases have been used.

Explicit instructions are given concerning equipment for rescue squads and for individual members of squads. There are chapters on respiratory protective equipment, lighting, gas detection and ventilating equipment and the special working equipment needed for rescue work, including oxyacetylene cutting apparatus.

Emphasis is placed on the training of rescue personnel in the emergency field care of the injured. It is pointed out that

rescue workers are usually the first to reach trapped casualties and that they must know how to render essential first aid. The medical division has just issued a manual entitled "Field Care and Transportation of the Injured" (THE JOURNAL, December 4, p 911) for the training of rescue workers, ambulance drivers and attendants, stretcher bearers and nonmedical members of mobile medical teams.

CHANGES IN STAFF OF THE MEDICAL  
DIVISION OFFICE OF CIVILIAN  
DEFENSE

Dr Courtney M Smith, assistant regional medical officer in the ninth civilian defense region, recently stationed in Seattle, has been promoted to be regional medical officer with headquarters in San Francisco. He succeeds Dr Fred T Toard, senior surgeon, U S Public Health Service, who has been made district director, U S Public Health Service District No 8, with headquarters in Denver. Prior to his appointment in the medical division of the Office of Civilian Defense Dr Smith was assistant health commissioner of Alaska. He holds the rank of surgeon in the U S Public Health Service Reserve. Dr Arthur J Lomas, deputy state chief of Emergency Medical Service for Maryland, Baltimore, has been assigned as regional medical officer for the third civilian defense region, which includes Maryland, Pennsylvania and Virginia. Dr Lomas succeeds Dr Mark V Ziegler, senior surgeon, U S Public Health Service, who has been assigned to the U S Maritime Commission. Dr Lomas has the rank of surgeon in the U S Public Health Service Reserve. Dr Benjamin F Miller, assistant professor of medicine, University of Chicago School of Medicine, Chicago, was recently commissioned in the U S Public Health Service and assigned to the Washington staff of the medical division on October 1 as assistant chief of the scientific research and development section. Ward L Mould, surgeon, U S Public Health Ser-

vice Reserve, who has been assigned to the staff of the medical division, Office of Civilian Defense, since September 1941, has returned to the U S Public Health Service. Dr. Mould served in various capacities in the medical division, most recently as medical chief of the industrial plant unit. He has been assigned temporarily as assistant to the director, U S Public Health

District No. 1, with headquarters in New York City. Victor H. Vogel, surgeon, U S Public Health Service Reserve, administrative officer of the blood plasma unit of the medical division since its establishment early in 1942, has been transferred to the staff of the U S Public Health Service Hospital in Lexington, Ky.

## ARMY

### SELECTION OF CASES FOR ELECTIVE OPERATION FOR PREINDUCTION DISABILITY

Circular Letter No. 190 of the Office of the Surgeon General is concerned with the selection of cases for elective operation for preinduction disability. It was issued on November 17 to all medical officers of the United States Army and is to be substituted for S. G. O. Circular Letter No. 167 of Nov. 30, 1942. The suggestions which follow are now recommended as routine in the army medical service.

1. In order to achieve maximum utilization of manpower it is desirable to perform elective operations for the correction of preinduction disabilities, but careful consideration must be given to the selection of individuals with these defects.

2. Elective surgery should be considered only for individuals with conditions which experience has shown may be readily corrected and who thereby can be restored to full military duty within a relatively short period of time. On the other hand, operations should not be considered in individuals with defects which would require prolonged hospitalization or in which the liability of recurrence or failure is great. Some examples of these preinduction defects which should not be considered for operation are: herniated nucleus pulposus, recurrent pilonidal sinus with extensive involvement and scar formation, and internal derangements of the knee except those with intact crucial and lateral ligaments, good thigh musculature and no arthritic changes. No person with a preinduction disability should be considered for an elective operation unless the person gives particular promise of being of future value to the Army both from a mental and from a physical aspect.

### THE REAM GENERAL HOSPITAL

The U S Army took over from the Army Air Force on September 10 the Regional Station Hospital, formerly the Breakers Hotel, of Palm Beach, Fla., and on October 1 this hospital was officially designated as the Ream General Hospital. The location of the hospital is excellent for convalescent rehabilitation. It is situated directly on the Atlantic Ocean, with beach areas for games, exercise and sun bathing. There is also a large outdoor salt water swimming pool. The operating rooms, laboratories, physical therapy and other general hospital clinics are equipped with the most modern appliances. At the present time all types of cases are treated—wounds received or diseases contracted in the theater of operations. However, for the future this hospital has been designated by the Office of the Surgeon General to specialize in maxillofacial plastic surgery, ophthalmic surgery and neurosurgery.

The Ream General Hospital was named for Major William R. Ream, first flight surgeon to qualify as an airplane pilot and first flight surgeon to lose his life in a plane crash in World War I.

The medical officers on the staff at present are as follows:

Col. Charles C. Denner, Belmont, N. Y., commanding officer.  
Lieut. Col. Norman L. Cutler, Newark, Del., chief of ophthalmology section.

Lieut. Col. Charles H. Fair, Greenville, S. C., chief of surgical service.  
Major Sam W. Banks, Chicago, assistant, surgical service (orthopedic).  
Major Truman G. Blocker Jr., Austin, Texas, assistant, surgical service.  
Major Joshua C. Drooker, Dorchester, Mass., surgical service (ENT).  
Major Paul F. Fletcher, Lenox, Miss., assistant, surgical service.  
Major Isadore W. Ginsburg, Linwood, Pa., assistant, medical service (cardiology).  
Major Augustus McCravy, assistant, surgical service.  
Major Daniel J. Preston, Wilmington, Del., assistant, surgical service.  
Major Herman Selmski, New York, assistant, medical service (neuro-psychiatry).  
Major Herman Semenov, Beverly Hills, Calif., chief, ENT section.

Major Joseph E. Schaefer, assistant, surgical service.  
Major Joseph H. Shaffer, Detroit, chief of medical service.  
Capt. Thomas F. Coates Jr., Tazewell, Va., assistant, medical service.  
Capt. John A. Gormly, Providence, R. I., assistant, medical service.  
Capt. William W. Jack, Grand Rapids, Mich., assistant, surgical service.  
Capt. Orville N. Jones, Portland, Ore., assistant, surgical service.  
Capt. Stephen Kiss, Woodhaven, N. Y., assistant, medical service.  
Capt. Edwin J. Medden, Seneca Falls, N. Y., assistant, surgical service.  
Capt. William Serber, Philadelphia, chief of roentgenology service.  
Capt. Clyde F. Smith, Philadelphia, attending surgeon.  
1st Lieut. Alfred R. Berkeley Jr., Roanoke, Va., assistant, medical service.  
1st Lieut. Richard W. Burger, Cokeburg, Pa., assistant, medical service.  
1st Lieut. Carl E. Lischer, Webster Groves, Mo., assistant, surgical service.  
1st Lieut. Anthony C. Reiger, Southeast Rapids, Mich., assistant, surgical service (physical therapy).  
1st Lieut. Leonard Stone, Staten Island, N. Y., assistant medical service.  
Capt. Mary A. Muldoon, A. N. C., Germantown, Pa., chief nurse.

### A. M. A. EMPLOYEE AWARDED LEGION OF MERIT

Master Sergt. John A. Kovacs was a member of the staff of the Council on Pharmacy and Chemistry before going into the army. He is now serving at Headquarters in the North African Theater of Operations and was recently awarded the Legion of Merit "for exceptionally meritorious conduct in the performance of outstanding services." The official citation continues: "Sergeant Kovacs organized and administered without adequate assistance an efficient administrative system in the Office of the Surgeon, North African Theater of Operations, which was highly successful. With an infinite capacity for detail and with initiative, resourcefulness and leadership beyond all expectation, he made function the complex administration necessary for theater medical service. Throughout this entire time he maintained all required records, prepared necessary books and gathered data utilized in plans and operations for the Tunisian campaign. His outstanding devotion to duty and his superior performance materially contributed to the medical service in North Africa and set a high example for others. Entered service from Chicago, Illinois."

### CHIEF OF NEUROPSYCHIATRY AT AMERICAN BASE HOSPITAL IN NORTH AFRICA

Lieut. Joseph Zimmerman, formerly of Brooklyn, has been appointed chief of neuropsychiatry at the American base hospital in North Africa. Dr. Zimmerman went to Africa with one of the first medical detachments of the Army and was assigned to headquarters in Algiers, where he has served until his most recent assignment. Dr. Zimmerman graduated from Syracuse University College of Medicine in 1936 and served his internship at the North Eastern Hospital in Philadelphia. He entered the service in December 1942.

### MAJOR GEN. JOHN M. WILLIS TRANSFERRED

Major Gen. John M. Willis, who has been commanding officer at Camp Grant, Ill., since October 1941, has been transferred to command all medical and hospital services of the army throughout the Ninth Service Command, comprising the states of California, Nevada, Utah, Oregon, Washington, Idaho, Arizona and Montana. Because of the presence in that wide area of certain huge army medical establishments, the new assignment is considered to be of unusual importance. With headquarters at Fort Douglas, Utah, General Willis will have direct

supervision of such institutions as Fitzsimons General Hospital, Denver, and the Letterman General Hospital, San Francisco. General Willis graduated from George Washington University School of Medicine, Washington, D. C., in 1909 and has been a medical officer of the regular army since 1911.

### EMERGENCY SURGERY OF THE EXTREMITIES

Circular Letter No. 189 of the Office of the Surgeon General is concerned with emergency surgery of the extremities. It was issued on November 17 to all medical officers of the United States Army. The suggestions which follow are therefore recommended as routine in the army medical service.

1. Compound fractures and wounds of the extremities are still being treated with closure of the wounds and without thorough debridement. On a recent inspection trip 3 patients were observed who had recently undergone guillotine amputation of the lower extremity for gas gangrene, 2 after wound closure and the third following incomplete debridement. Other patients have suffered extensive infection under similar circum-

stances. Compound fractures and other wounds will have debridement as soon as the patient's condition permits, and wounds will be left open with light packing. It is strictly forbidden that any compound fracture or extensive wound of the extremities be treated with closure of the wound.

2. Confusion exists relative to the principles of emergency amputation. For example, given a hypothetical case of a hopelessly damaged leg near the ankle joint, the proper treatment is neither an open (guillotine) nor a closed amputation in the middle third of the leg. The proper emergency amputation in this type of case is an open (guillotine) amputation at or immediately above the level of the injury. Amputation for trauma will be a circular open (guillotine) amputation at the lowest possible level followed by the application of skin traction. It is strictly forbidden that such amputation be done higher than necessary or that the stump be closed. (See S. G. O. Circular Letter No. 91, 26 April 1943.)

Commanding officers of all general and station hospitals will be held responsible for the abandonment of the improper procedures described above and for the necessary instruction and compliance with these directives.

## PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

### HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their Procurement and Assignment Service quotas for Jan. 1, 1944 or later.

(Continuation of list in *THE JOURNAL* December 11, p. 975)

#### CALIFORNIA

Barlow Sanatorium, Los Angeles. Capacity 100 admissions. 165 Dr. Howard W. Bosworth, Medical Director (resident—tuberculosis—July).  
Orthopaedic Hospital, Los Angeles. Capacity 75 admissions. 1,876 Miss Mildred Riese, Superintendent (resident—orthopedics—October).  
St. Luke's Hospital, San Francisco. Capacity 225 admissions. 6,548 Dr. Howard H. Johnson, Medical Director (resident—medicine surgery—July).

#### DELAWARE

St. Francis Hospital, Wilmington. Capacity 137 admissions. 1,847 Sr. M. Illuminata, Superintendent (intern).

#### DISTRICT OF COLUMBIA

Garfield Memorial Hospital, Washington. Capacity 452 admissions. 10,197 Dr. Francis J. Eisenman, Superintendent (residents—obstetrics, medicine, surgery—April/July).

#### FLORIDA

St. Luke's Hospital, Jacksonville. Capacity 210 admissions. 6,462 Mr. W. E. Arnold, Executive Director (intern—March).

#### INDIANA

St. Joseph's Hospital, South Bend. Capacity 192 admissions. 4,494 Sister Mary Ellen, Superintendent (interns—January/July).

#### IOWA

Broadlawns Polk County Public Hospital, Des Moines. Capacity 49 admissions. 352 Mr. T. P. Sharpnack, Administrator (intern—March).

#### MARYLAND

South Baltimore General Hospital, Baltimore. Capacity 170 admissions. 3,755 Mr. William A. Dawson, Administrator (2 interns).

#### MASSACHUSETTS

Boston Floating Hospital, Boston. Capacity 50 admissions. 866 Mr. Frank E. Wing, Director (3 assistant residents—pediatrics—July).

Carney Hospital, Boston. Capacity 268 admissions. 5,619 Sister Mary Paul, Superintendent (3 interns).

Haverhill Municipal Hospital (Hale), Haverhill. Capacity 198 admissions. 4,487 Mr. William W. Savage, Director (intern—March).

Malden Hospital, Malden. Capacity 271 admissions. 4,984 Dr. Donald M. Morrill, Medical Director (resident—mixed—July).

#### MISSOURI

Homer G. Phillips Hospital, St. Louis. Capacity 753 admissions. 10,686 Dr. Wallace B. Christian, Medical Superintendent (2 assistant residents—April).

#### NEW JERSEY

Elizabeth General Hospital and Dispensary, Elizabeth. Capacity 250 admissions. 5,523 Mr. W. Malcolm MacLeod, Superintendent (interns—March/July).

Hospital of St. Barnabas and for Women and Children, Newark. Capacity 252 admissions. 6,048 Mr. John G. Martin, Superintendent (intern—April/June/September).

St. Joseph's Hospital, Paterson. Capacity 468 admissions. 7,835 Sister Anna Rita R.N., Superintendent (8 interns).

Weehawken North Hudson Hospital, Weehawken. Capacity 191 admissions. 3,549 Dr. J. Lawrence Evans, Administrator (3 interns—May).

#### NEW YORK

Jewish Memorial Hospital, New York City. Capacity 217 admissions. 4,994 Mr. Louis Miller, Superintendent (intern—January/February, March/April/July).

#### OHIO

Toledo Hospital, Toledo. Capacity 320 admissions. 7,236 Mr. Wilson L. Benfer, Superintendent (2 interns—February/April—resident—July).

Harding Sanitarium, Worthington. Capacity 59 admissions. 396 Dr. George T. Harding, Medical Director (resident—Psychiatry—Grad. College Med. Evang.).

#### OKLAHOMA

St. John's Hospital, Tulsa. Capacity 300 admissions. 7,800 Sister M. Rosalinda R.N., Superintendent (3 interns—March).

#### PENNSYLVANIA

Hospital of the Woman's Medical College of Pennsylvania, Philadelphia. Capacity 200 admissions. 3,532 Dr. F. S. Fetterman, Medical Director (3 interns—April).

Memorial Hospital, Philadelphia. Capacity 118 admissions. 2,635 Mr. Harry J. Rodgers, Superintendent (intern).

St. Christopher's Hospital for Children, Philadelphia. Capacity 82 admissions. 1,877 Miss Mabel Barr, Administrator (3 assistant residents—pediatrics—July).

#### SOUTH CAROLINA

Greenville General Hospital, Greenville. Capacity 315 admissions. 7,007 Mr. J. B. Norman, Superintendent (intern).

#### TEXAS

All Saints Episcopal Hospital, Fort Worth. Capacity 100 admissions. 3,210 Dr. T. C. Terrell, Medical Director (resident—mixed—July).

#### WEST VIRGINIA

Wheeling Hospital, Wheeling. Capacity 236 admissions. 4,587 Sister Mary Ruth R.N., Superintendent (2 interns—January—mixed resident—July).

#### WISCONSIN

Luther Hospital, Eau Claire. Capacity 176 admissions. 3,868 Mr. N. E. Hausbus, Manager (intern).

St. Francis Hospital, LaCrosse. Capacity 292 admissions. 5,518 Sister M. Fridolue, Superintendent (intern).

St. Mary's Hospital, Madison. Capacity 225 admissions. 6,657 Sister M. Bernadette R.N., Superintendent (interns).

Misericordia Hospital, Milwaukee. Capacity 183 admissions. 4,851 Sister M. Seven Dolors, Superintendent (intern—May).

## MISCELLANEOUS

SOME RESTRICTIONS REMOVED ON THE  
MANUFACTURE AND DISTRIBUTION  
OF X-RAY EQUIPMENT

The War Production Board issued on November 29 Limitation Order L-206 as amended. A complete revision of the former Order L-206 (issued in October 1942) whereby controls over the manufacture and distribution of x-ray equipment are relaxed, it is designed to provide adequate equipment for civilian use without the paper work formerly required by special authorization of civilian purchase orders and by the filing of production and shipping schedules. In general, military orders are now being filled on schedule.

The chief provisions of the amended order are as follows:

1. Shipments of medical x-ray equipment for civilian use are placed on a quota basis. Annual shipments of each manufacturer are limited to 75 per cent by dollar value of the average annual shipments made during 1937, 1938 and 1939. Quotas apply only to shipments within the United States, to its possessions and territories and to Canada.

2. Medical x-ray equipment for the United States and Canadian military services and for export under lend lease and OLW (now part of the Foreign Economic Administration) is not included in the quota. Industrial x-ray equipment is also outside the quota.

3. Former restrictions on models and types of specified x-ray equipment are removed from the order through deletion of schedule A.

4. Monthly reports of shipments by dollar value are to be made by letter. Production and shipping schedules (form PD-774) and authorization applications (form PD-556) need no longer be filed.

5. Coverage of the order remains unchanged. X-ray equipment, as defined, includes only power units, radiographic, fluoroscopic and therapy tables, photofluorographic units, cassette changers, and tube stands. It does not include parts, accessories or appliances or rebuilt and second hand equipment.

## PUBLIC HEALTH UNDER HITLER

On August 28 *Transocean* the scientific correspondent of Werner writes: More than 1,000 foreign medical doctors from thirty-four different states are studying in Berlin at the end of the fourth year of war. They are not medical students but fully fledged doctors, many of them famous in their home countries and several even with international reputations. They have been attracted to Berlin by German achievements in the field of medicine. Many of them are interested in the German methods of combating infant mortality, the results of which were recently published. Another field they are studying intensely is that of German methods of care for mothers in childbirth, which have practically abolished puerperal fever. Many of these foreign physicians working in Berlin were commissioned by their respective governments and are also interested in matters pertaining to youth and child welfare as well as hereditary biology. The specialists with whom I had occasion to talk expressed surprise that during the seven years from 1936 to 1943 one million more children were born in Germany than could be expected in 1933. Another fact which surprised them was that a close study of the birth rate showed that the number of German families with three children during these seven years had increased by 54 per cent and that of families with four children by as much as 62 per cent. The large influx of medical men was also caused by the development of surgical methods in Germany as a result of the war. For instance, the improvement of the electron microscope with its revolutionary results in surgery has brought to Berlin a number of specialists from France, the southeastern European countries and Scandinavia.

According to *Le Nouvelliste de Lyon* of August 25, 97 cases of poliomyelitis have till now been registered, of which 35 are in Montluçon itself and 62 in the neighboring communes belonging to the Montluçon arrondissement, namely 23 children under 6, 21 children from 6 to 13, 32 youths from 13 to 21 and 21 adults.

Sixteen deaths have occurred, especially among youths and adults. Mademoiselle Possy, a medical officer and head of the Montluçon health department, immediately organized a serotherapy center at the municipal laboratory where 12 liters of blood was collected from about 60 former poliomyelitic patients from this 4,000 centiliters of serum could be obtained. Moreover the Pasteur Institute, the Toulouse health department and Dr. Debre sent serum at the outbreak of the epidemic. Dr. Bons has opened a special ward at the Montluçon Municipal Hospital accommodating 69 patients. Two hundred and forty-six former patients answered the broadcast appeal of the Secours national, of which 148 will be sent to Paris, 31 to Lyons, 13 to Montpellier, 9 to Bordeaux and 8 to Toulouse, where blood collecting centers have been opened on lines similar to those of the Montluçon center, where 37 ex-patients will also be sent from various departments.

The Berne correspondent of *Aftonbladet* of August 23 reports that in an article entitled "Unborn Children" the German health leader, Conti, says that the population of Berlin will die out in three generations if the birth rate continues to decline as it is doing at present.

*Le Petit Parisien* (North Zone) of August 1 states that Parisians are complaining this year of a new kind of offensive, for which fleas and lice are responsible. This invasion is worthy of the full attention of the health authorities, for it is well known that lice are a means of spreading infection, particularly exanthematic typhus. It is true that up till now there has been no epidemic but at the most a few isolated cases. Nevertheless a strict watch must be kept, all suspects must be isolated and delousing and disinfecting posts must be set working full blast both in Paris and in the suburbs.

*Suomen Sosialidemokratia* of September 19 states that two thousand foreign doctors from thirty-four different countries are now working in Berlin, some of them famous all over the world.

The September 22 *Journal officiel* published a law according to which midwives are included in the Order of Doctors. They form in each department a "college" which has corporative functions similar to those of the "college" of doctors.

According to DNB of September 23 the führer has awarded the Knight's Cross of the War Merit Cross with Swords to Prof. Dr. Handloser, chief of the army medical services, in recognition of his services in the development and operation of the medical services of the armed forces.

According to Rome Radio (home service in Italian) of September 22, in conformity with the regulations concerning the uniform of the militarized personnel of the Red Cross, officers of the Red Cross organizations, doctors and chemists are to carry revolvers in their belts. Naturally, when such personnel are ordered to go out without arms, they may retain them in their houses.

Radio Vichy of September 30 reports that the initial courses for medical students have been canceled in schools which are at present open, with the exception of the Nantes and preparatory schools. Candidates who were about to take these courses will be able to put their names down only for the following faculties: Paris, Montpellier, Nancy, St. (evacuated to Clermont), Lyons, Bordeaux, Lille, Toulouse and Nantes. To avoid crowding in certain the number of candidates permitted to follow the course will be decided by the Ministry for National Education. The "mixed" Faculty of Medicine and Pharmacy has invited candidates to send, before October 1, a form in which they state in order of preference the faculties they would like to attend. In the event of change of their order of preference, they may meet their request if possible.



## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

### CALIFORNIA

**Patent Rights Awarded to Alumni Research Foundation.**—Dr Alonzo J Neufeld, assistant clinical professor of orthopedics, College of Medical Evangelists, Loma Linda-Los Angeles, has made a legal transfer of all his rights in the appliance of the Neufeld pin to the recently created Alumni Research Foundation of the college (*THE JOURNAL*, October 9, p 364). Dr Neufeld's one stipulation is that all monies received shall be applied to research work in the field of orthopedic surgery. Dr Neufeld devised the Neufeld pin some years ago in the course of his clinical work. He has always kept the proceeds from the pin in a separate fund dedicated to research.

**Memorial Fund for Research in Pathology.**—The A Herman Zeiler Memorial Fund will be created under a resolution adopted at a meeting of the medical executive committee of the Cedars of Lebanon Hospital, Los Angeles, November 9, in honor of the late Dr Zeiler, who was director of the laboratories, member of the medical executive committee and chief of staff of the hospital. The fund will be established by assessment from the members of the staff of the hospital and by contributions from colleagues and friends and will be used for research in pathology under the administration of the research committee of the hospital. The resolution also provides that a portrait of Dr Zeiler be prepared to hang in the hospital. Dr Zeiler died July 16.

**Annual Course in Ophthalmology and Otolaryngology.**—The Research Study Club of Los Angeles will conduct its thirteenth annual midwinter postgraduate clinical convention in ophthalmology and otolaryngology January 17-29. Speakers will include:

Dr Isidore Friesner, New York  
Dr James Watson White, New York  
Dr Thomas E. Carmody, Denver  
Dr Frederick T. Hill, Waterville, Maine  
Dr Dean M. Lierle, Iowa City  
Dr Arthur W. Proetz, St. Louis  
Dr Robert F. Ridpath, Philadelphia  
Dr Leroy A. Schall, Boston  
Dr John J. Shea, Memphis  
Dr Georgiana M. Dvorak Theobald, Oak Park, Ill.

A special course in "Applied Anatomy and Cadaver Surgery of the Head and Neck" will be held January 28-February 1 with Drs. Simon Jesberg, associate clinical professor of surgery (otology, rhinology and laryngology), University of Southern California School of Medicine, Los Angeles, and Samuel A. Crooks, associate professor of anatomy, Loma Linda College of Medical Evangelists, as the instructors.

### DISTRICT OF COLUMBIA

**Soldier's Death from Rabies First in Forty Years.**—The first human fatality from rabies in Washington in nearly forty years was announced November 29 by the district health department. Sgt. Harold L. Whitman, on duty at the Army War College, died November 27 as the result of rabies contracted last August when he was bitten by a stray dog on the college grounds. The dog was later found to be infected. Sergeant Whitman was given the Pasteur treatment at the Walter Reed General Hospital and after several weeks was returned to duty. On November 23 he became nervous and apprehensive, newspapers reported and was admitted again to Walter Reed General Hospital. Death occurred shortly before midnight November 27. In a statement to the press, Dr James G. Cumming, director of the bureau of preventable disease for the district health department, stated that the size of the bite militated against the effectiveness of the Pasteur treatment.

### ILLINOIS

**Southern Illinois Medical Officers.**—Dr Ralph S. Sabme, Murphysboro, was named president of the Southern Illinois Medical Association at its meeting in Anna, November 5. Other officers include Drs. Lewis F. Barger, Golconda, and Charles D. Nobles, Anna, vice presidents, and Willis L. Lewis, Herrin, who was elected secretary treasurer for the fifth consecutive time.

### Chicago

**Personal.**—Dr Max Thorek was presented with the Mexican Order of the Aztec Eagle at a dinner on December 2 in recognition of his contributions to medicine and surgery.

**Dr Hektoen Reelected Chairman of Cancer Committee.**—At the annual meeting of the Chicago Cancer Committee, Inc., held December 6 at the Institute of Medicine of Chicago, Dr Ludvig Hektoen was reelected chairman. Dr Hektoen is executive director of the National Advisory Cancer Council and has been chairman of the Chicago Cancer Committee since its organization in 1941.

**Citizen Fellowships Awarded to Laymen.**—The Institute of Medicine of Chicago at its twenty-eighth annual meeting in the Palmer House, December 7, awarded citizen fellowships to Mr Charles B. Goodspeed, president of the board of Presbyterian Hospital, Sidney L. Schwarz, director of the executive committee of the board of trustees of Michael Reese Hospital and Miss Gwethalyn Jones, who among other philanthropies established the Thomas D. Jones Memorial Clinic Building for the Children's Memorial Hospital. The three guests of honor were cited for their meritorious contributions to the health and welfare of the community. Frederick B. Noyes, DDS, gave the presidential address on "Personal Recollections of a Leader, Greene Vardiman Black. His Development and Influence."

### INDIANA

**Advisory Health Council Named.**—The Jackson County Health Council has been organized to serve as an advisory unit to the Jackson County Health Department, newspapers reported on October 22. The new council will assist in coordinating efforts of local health and social agencies. Dr Louis Henry Osterman, Seymour, was named chairman of the group.

**Fatal Case of Cadmium Poisoning.**—One worker died within four days after a prolonged exposure to high concentration of cadmium fumes in an Indiana plant, according to *Industrial Hygiene*. The deceased worker undertook a job of "flanging" 2 inch cadmium plated stainless steel pipe. To produce a flange, the pipe was heated with a blow torch until the pipe became a cherry red. Soon after beginning the operation the employees complained about irritation of the nose and throat as well as the thick blue smoke present in the workers' environment. Within four hours 2 employees were violently ill and were taken home. Vomiting, chest pains and shortness of breath were the chief symptoms at this time. The chest symptoms of 1 worker increased and within four days this worker died of a severe chest involvement.

### IOWA

**Five Day Treatment of Syphilis Begins in Three Centers.**—Three centers have been established in Iowa for the start of the first decentralized program of five day treatment of syphilis in the state. The centers are at Broadlawns Polk County Public Hospital, Des Moines, where the treatment has been carried on since 1939, University Hospitals, Iowa City, and St. Joseph Mercy Hospital, Sioux City. Treatment of both men and women is to be effected in cooperation with practicing physicians and health officers, who may refer for treatment patients with early cases of infectious syphilis (under two years duration) or those infected with gonorrhea. On completion of treatment all patients will be returned to the referring physician with recommendations for continued observation. The state department of health will furnish transportation to the centers for indigent patients. No charge will be made for any service, and no distinction will be made as to race or financial status. Similar centers have been established in Omaha, St. Louis, Chicago, Indianapolis and Denver.

### KENTUCKY

**Physician Named Director of Near East Foundation.**—Dr Wilson F. Dodd, medical director of the Berea College, Berea, has been appointed medical director of the Near East Foundation in Greece. According to the *Berea Citizen*, Dr Dodd was to take passage sometime in October for Cairo, Egypt, where he will remain until Greece is open for rehabilitation work.

**Personal.**—Dr Stefanie Young, formerly of Hartford, Conn., has been appointed college physician at Eastern Kentucky State Teachers College, Richmond, succeeding Dr Henry C. Jasper, who had been acting college physician since the resignation of Dr Jacob D. Farris. Major David W. Barrow, M.C., A.U.S., received first prize for scientific exhibits during the meeting of the Southern Medical Association in Cincinnati in November. Major Barrow's work was a chart

and graph exhibit illustrating the results of a violent explosion involving some 200 men, more than 50 of whom were killed or injured

**Socialized Medicine Will Force Members to Close Offices**—The Christian County Medical Society recently adopted resolutions stating that members would be asked to close their offices and cease to practice if congress passed the bill the medical group charges would socialize medicine, according to the *Louisville Courier-Journal*, November 7. The newspaper further states that the society charged the proposed legislation would "make the surgeon general of the United States a medical dictator over the medical services of 93 per cent of our people," giving him powers that would be "absolute, as much so as a Nazi dictator." Closing of doctors' offices in Christian County, the resolution stated, would show the public "that we mean not to have irrational socialism in the United States."

#### MICHIGAN

**New President of W K Kellogg Foundation**—Emory W. Morris, treasurer, assistant secretary and general director of the W K Kellogg Foundation since 1940, was elected president of the foundation's board of trustees at the recent annual election of officers in Battle Creek. He succeeds George B. Darling, Dr. P. H., who resigned as president and comptroller of the foundation to join the National Research Council, Washington, D. C. (THE JOURNAL, November 27, p. 849)

#### MINNESOTA

**License Revoked**—On November 5 the Minnesota State Board of Medical Examiners revoked the license to practice in the state of Dr. Gustav D. Eisengraber, Minneapolis, on the charge of "procuring, aiding and abetting a criminal abortion." On November 2 Dr. Eisengraber was given a suspended sentence of up to ten years in the state penitentiary and placed on probation for five years. According to the *Bulletin* of the Hennepin County Medical Society, Dr. Eisengraber previously had pleaded guilty to a charge of first degree manslaughter resulting from the death of a woman following an illegal operation.

**Imprisoned for Illegal Shipments of Abortion Paste**—Mrs. Anne M. Jenks, White Bear Lake, was sentenced to nine months' imprisonment in the Women's Reformatory at Shakopee and fined \$200 for violating the Federal Food, Drug and Cosmetic act. Mrs. Jenks was indicted by a federal grand jury in St. Paul, June 29, on twenty counts for alleged violations of the law. On January 19 she had been permanently enjoined from shipping in interstate commerce a drug labeled 'Intrauterine Paste' (THE JOURNAL, March 6, p. 775) or "Dependon Products Paste," manufactured and sold by Mrs. Jenks at White Bear Lake. The injunction followed a lengthy trial in which the government called 46 witnesses, 39 of whom were physicians. Six of the witnesses were confessed criminal abortionists. The court, in its findings, held that the paste "is unsafe and dangerous to health and has caused fatalities and serious injury." The court also found, as a matter of law, that the paste was misbranded and that the labeling was false and misleading. At the conclusion of the injunction suit Mrs. Jenks was fined \$250 for contempt of court and her husband, W. S. Jenks, was fined \$500 for a similar offense growing out of the shipment of the paste to a Missouri physician after the court had issued a temporary injunction on Oct. 31, 1942.

#### MONTANA

**Election of State Medical Board**—At a recent meeting of the Montana State Board of Medical Examiners in Helena Dr. Allen R. Foss, Missoula, was elected president, Dr. Cedric H. Nelson, Billings, vice president and Dr. Otto G. Klein, Helena, secretary. Other members of the board are Drs. Earl S. Porter, Lewistown, and John H. Garberson, Miles City.

#### NEW JERSEY

**License Revoked**—The New Jersey State Board of Medical Examiners recently revoked the license to practice medicine and surgery of Dr. Louis George D'Elia, Secaucus, following his conviction of a violation of a federal narcotic law.

**Drive to Reduce Whooping Cough**—In an effort to reduce whooping cough in New Jersey, the state has made available a vaccine to sixty centers in the state to help combat the disease. Newspapers report that whooping cough caused 45 deaths in New Jersey last year, 43 among children less than 5 years in age. In all, 12,461 cases were reported during the year. The preventive vaccine, now available at the sixty centers throughout the state, may be obtained for children and adults by physicians, hospitals and local health boards.

#### NEW YORK

**Course for Orthoptic Technicians**—The Rochester Orthoptic Center, approved by the Monroe County Medical Society, announces a course for orthoptic technicians. Additional information may be obtained from Mrs. Margaret Lundeau, 31 North Goodman Street, Rochester.

**Graduate Lectures**—Dr. Barton F. Hauenstein, Buffalo, will discuss "The Present and Postwar Importance of the Dysenteries" in a graduate lecture before the Broome County Medical Society at Binghamton, January 11, and Dr. Harry Most, New York, "The Importance of Early Diagnosis and Treatment of Falciparum Malaria," February 8. Dr. Clayton W. Greene, Buffalo, will lecture before the Greene County Medical Society, December 23, Catskill, on "What Can We Do for Angina Pectoris and Coronary Occlusion?" Dr. Leon H. Griggs, Syracuse, discussed "Industrial Dermatoses" before the Jefferson County Medical Society, Watertown, December 9. These graduate lectures are sponsored jointly by the state medical society and the state department of health.

#### New York City

**License Restored**—On November 13 the license to practice medicine in New York of Dr. Morris Sternberg, Brooklyn, was ordered reinstated by the order of the commissioner of education. Dr. Sternberg's license had been suspended by a vote of the board of regents in November 1941 for a period of six months.

**Mental Hygiene Committee Creates Rehabilitation Division**—The National Committee for Mental Hygiene has established a division of rehabilitation under the direction of Dr. Thomas A. C. Rennie, associate professor of psychiatry at Cornell University Medical College. The new division will act as a point of clearance in the field of rehabilitation and a source of advice to those responsible for the federal rehabilitation program, according to *Mental Hygiene*.

**Rules Amended for Communicable Diseases**—At a meeting November 16 the city department of health adopted some changes in its regulations governing the isolation of persons affected with communicable diseases. Places occupied by patients with scarlet fever, diphtheria and acute anterior poliomyelitis will no longer be placarded. The isolation period in the uncomplicated case of scarlet fever in a person 16 years of age or over has been reduced to fourteen days from the day of onset, the present twenty-one day period of isolation being retained for persons under 16 years of age except during the months of June through October, when the isolation period will also be only fourteen days. In the future whenever in the household of a case of scarlet fever another illness occurs commonly due to *Streptococcus hemolyticus*, the latter patient will be required to comply with the provisions for scarlet fever. In cases of acute anterior poliomyelitis all stools shall be disinfected immediately, in accordance with recent reports emphasizing that the virus can be recovered from the stools of patients with the disease.

**Advisory Committee Named for Health Education Bureau**—An advisory committee of physicians, educators and publicists has been created to assist the health education bureau of the city department of health. The department aims to expand its health education program into new phases, such as cancer control, and the prevention of rheumatic heart disease and home accidents. The new committee will advise on these projects. Dr. Donald B. Armstrong, third vice president of the Metropolitan Life Insurance Company, is chairman of the new group, which includes the following members:

Bailey B. Burritt, chairman of the executive council of the Community Service Society.

Dr. Iago Galdston, executive secretary of the Committee on Medical Information of the New York Academy of Medicine.

Dr. Joseph Golomb, chairman of the public health committee of the Bronx County Medical Society.

Leon Lovine, assistant director of education of the Columbia Broadcasting System.

Dr. Edwin P. Maynard Jr., Brooklyn, chairman of the New York Heart Association.

Dr. Harry S. Mustard, professor of preventive medicine of the De Lamar Institute of Public Health, Columbia University College of Physicians and Surgeons.

Frank J. O'Brien, associate superintendent of schools.

Donald Payne, vice president of Young & Rubicam, advertising agency.

Dr. Charles A. Perera, chairman of the special committee on publicity education and illegal practice of medicine of the New York County Medical Society.

Paul F. Stricker, executive vice president of the Greater New York Safety Council.

Mrs. Katherine Z. W. Whipple, health education secretary of the New York Tuberculosis and Health Association.

Dr. Charles C. Wilson, professor of health and physical education of Columbus University Teachers College.

## OHIO

**Annual Meeting**—The Ohio State Medical Association will hold its annual meeting in Columbus May 2-4 instead of May 9-11 as previously announced.

**Dr Howard Dittrick Named Editorial Director of Clinic Foundation.**—Dr Howard Dittrick, editor in chief of the *Bulletin* of the Academy of Medicine of Cleveland has been appointed editorial director of the Cleveland Clinic Foundation. Dr. Dittrick retired from practice December 1 and will take over his new work January 1. He will continue his work as an attending physician to the student health service at Western Reserve University and as directing editor of *Current Researches in Anesthesia and Analgesia*. In his new activities he will have charge of editorial work, exhibits, museums, library, and art and photographic departments. He will also be secretary of the Frank E. Bunts Educational Institute. Dr. Dittrick graduated at the University of Toronto Faculty of Medicine, Ontario, in 1900. He formerly served on the staff of Western Reserve University School of Medicine. He has been president of the Cleveland Medical Examiners Society and trustee and director of the Museum of Historical and Cultural Medicine of the Cleveland Medical Library Association. The Academy of Medicine recently presented its distinguished service award for 1943 to Dr. Dittrick for his long service to the academy.

**Surgical Fellowship Fund Honors Physicians**—The board of trustees of the Cleveland Clinic Foundation has given a fund of \$50,000 to Western Reserve University School of Medicine, Cleveland, the income to be devoted to surgical fellowships for accredited postgraduate students chosen by the medical school faculty. The fund is named for Drs. Frank E. Bunts, George Crile and William E. Lower, who founded the Cleveland Clinic in 1921. According to the *Voice of Reserve* the trustees will add to the fund from time to time. The trustees also contemplate a grant for postgraduate fellowships in medicine to be named in honor of Dr. John Phillips, chief of the division of medicine of the clinic, who died in the Cleveland Clinic Disaster of May 1929. The announcements were made during a dinner commemorating the one hundredth anniversary of Western Reserve University School of Medicine (THE JOURNAL, October 16, p. 430), at which honorary degrees were awarded to Drs. George H. Whipple, Rochester, N. Y., and Reginald Fitz, Boston, who were given degrees of doctor of science, and to Frederick C. Waite, Ph.D., and Dr. William T. Corlett, Cleveland, the degrees of doctor of humanities and Dr. Torald H. Sollmann, dean of the medical school, doctor of laws.

## OKLAHOMA

**Dr Fletcher Chosen to Teach Surgical Diagnosis**—Dr. Archibald G. Fletcher, Philadelphia, has been employed to teach surgical diagnosis in the state during 1944 and 1945. He will conduct the fourth postgraduate course for physicians to be offered under the auspices of the Oklahoma State Medical Association with financial assistance from the Commonwealth Fund of New York and the state department of health. The course will open in the northeastern section of the state in February. During the past year Dr. Fletcher has been with the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania. He formerly served with the American Presbyterian Mission, Taiyuan, Chosen, and will remain in the United States for the duration.

## OREGON

**University News**—On December 22 Col. Charles K. Berle, M. C. U. S. Army, commanding officer of Barnes General Hospital, Vancouver, Wash., will deliver the commencement address at the University of Oregon Medical School, Portland. Sixty-three graduates will receive their diplomas in the second class to be graduated in 1943. Dr. Knox H. Finley has been appointed clinical professor and head of the division of psychiatry at the medical school to succeed Dr. Henry H. Dixon, who has been commissioned a lieutenant commander in the navy. Dr. John H. Benward has been named assistant medical director of the Doernbecher Children's Hospital Unit to succeed Dr. Paul V. Woolley, Jr., who has been assigned to Bethesda, Md., as a lieutenant in the navy.

## WASHINGTON

**Work Starts on Doctors Hospital**—Ground was broken, November 13, for the new Doctors Hospital, Seattle, to be constructed at a cost of more than \$800,000 and to provide for 200 patients. The new building will consist of two floors,

with basement and sub-basement space. The first floor will have facilities for maternity patients, and the second floor will contain five operating rooms and two wings of rooms for 80 patients. The plan for Doctors Hospital started about ten years ago, when a committee of the King County Medical Society authorized the establishment of a nonprofit corporation and bureau to provide medical service to subscribers at a monthly rate. More than \$200,000 in funds of the organization, accumulated in the ten year period but not subject to use except for the public good, will go toward the financing of the new institution, \$600,000 to be received from the federal government.

## ALASKA

**Tuberculosis Hospitals Proposed**—Tentative plans have been announced in the newspapers concerning the construction of two tuberculosis hospitals in Alaska for the treatment of both white and native patients. One would be located in Juneau and the other at either Nome or Fairbanks, the latter to be for Eskimos. Both would have accommodations for at least 200 beds and cost between 4 and 5 million dollars. Newspapers reported that the Division of Territories and Island Possessions of the U. S. Department of the Interior has agreed to sponsor the project, but operation of the hospital will be a federal agency experienced in this work. According to the *Juneau Empire*, November 4, the proposed plan stemmed from the approximately 2,500 cases of tuberculosis in the Territory of Alaska and the fact that there are less than 100 beds available for the treatment of both white persons and natives.

## HAWAII

**Dr. Wayson Retires from Active Service**—Dr. James T. Wayson, physician on the board of leper hospitals, Honolulu, and former general health officer of the territory of Hawaii, has retired from active service. Dr. Wayson was born in Port Townsend, Wash., in 1870. After he graduated at the University of California Medical School, San Francisco, in 1891 he was surgeon in the U. S. Cutter Service from 1892 to 1895, when he became attending physician to the Kalaheo Hospital for Lepers in Honolulu. He was a member of the board of health of Hawaii from 1905 to 1909, city and county physician to Honolulu from 1911 to 1918 and general health officer of Hawaii from 1918 to 1931. In 1932 Dr. Wayson was instrumental in setting up a separate board of hospitals and settlement to administer the leprosy phase of public health. He held the position of board physician from the time of its inception until his recent retirement.

## GENERAL

**Special Society Election**—Officers of the Central Society for Clinical Research, chosen at its recent annual meeting in Chicago, include Drs. Cecil J. Watson, Minneapolis, president, Willis M. Fowler, Iowa City, Iowa, vice president and Carl V. Moore, St. Louis, secretary-treasurer.

**American Board of Obstetrics and Gynecology**—The next written examination and review of case histories (part I) for all candidates of the American Board of Obstetrics and Gynecology will be held in various cities of the United States and Canada on February 12 (THE JOURNAL, June 19, p. 554). The part II examination will be held at Pittsburgh, June 9-14. Notice of the exact time and place of examination will be sent all candidates well in advance of the examination date. Candidates in military or naval service are requested to keep the secretary's office informed of any changes in address. If a candidate in service finds it impossible to proceed with the examinations of the board, deferment without time penalty will be granted under a waiver of our published regulations applying to civilian candidates. Additional information and application blanks may be obtained from Dr. Paul Titus, secretary, 1015 Highland Building, Pittsburgh 6.

**Federal Funds for Relocation of Physicians**—In the Senate an amendment was adopted to the bill proposed by Senator Russell Georgia providing an additional appropriation of \$345,000 for the United States Public Health Service to enable it to enter into agreements with private practicing physicians and dentists under which in consideration of the payment to them of a relocation allowance of not to exceed \$250 a month for three months plus the actual cost of travel and transportation of the physician or dentist and his family and household effects to a critical area in need of medical or dental care such physicians or dentists will agree to move to and engage in practice in such area for a period of not less than one year. No action can be taken by the Public Health Service under this authorization except on application of a municipality, county or other local subdivision of government duly approved by the

state health department having jurisdiction over the local subdivision. Furthermore, no contract may be made with any physician or dentist unless he "shall be admitted to practice by the state authority having jurisdiction of such new location." Each applicant subdivision must contribute \$100 to the total cost of the relocation allowance, travel and transportation costs of each physician or dentist and his family obtained by the applicant.

### LATIN AMERICA

**Health Activities in Latin America**—On November 4 the U. S. Department of State concluded negotiations with the republic of Uruguay preparatory to the establishment of a cooperative program to promote health and sanitation in Uruguay. As in other Central and South American republics in which similar programs are in operation, the Institute of Inter-American Affairs will furnish a group of physicians to be known as the field party to collaborate with the national health department in carrying out the program. Dr. Pascal I. Incheles, Montevideo, will be chief of the new field party.

**Congress on Administration and Organization of Hospitals**—The first regional institute for hospital administrators will be held in Mexico City, January 16-29, under the auspices of the Pan American Sanitary Bureau and the Inter-American Association of Hospitals in cooperation with many other agencies. The Pan American Airways is offering a 25 per cent reduction in transportation to delegates at the congress. Among those participating in the institute will be:

- Hon. George S. Messersmith, Ambassador from United States, American Embassy, Mexico (subject not announced)
- Mr. Felix Lamela, hospital consultant Pan American Sanitary Bureau, Washington, D. C., Instruction to Students
- Dr. Anne M. Hoge, chief, hospital facilities section Bureau of State Services, U. S. Public Health Service, Washington, Surveying, Planning, and Construction of Hospitals in a Community
- Dr. Norberto Treviño, Jefe de la Oficina de Estudios de la Secretaría de Salubridad y Asistencia de Mexico (Work Developed by the Study Commission in Relation to Mexico's Hospital Construction Program)
- Arq. Jose Villagrán García, supervisor de Proyectos y Construcciones de Hospitales de la Secretaría de Salubridad y Asistencia, Mexico, Mexican Hospital Architecture
- Dr. Federico Gómez, director del Hospital del Niño de Mexico, Organization and Management of the Hospital del Niño de Mexico
- Dr. Donato Alarcón, director del Sanatorio para Enfermos Tuberculosos de Huipulco, Organization and Management of Tuberculosis Hospitals and Sanatoria
- Dr. Malcolm T. MacEachern, associate director American College of Surgeons, Chicago, Clinical Records and Hospital Statistics
- Dr. Arthur C. Bachmeyer, associate dean Division of Biological Sciences University of Chicago, Hospital Contributions to Professional Education
- Dr. Robert H. Bishop Jr., president American College of Hospital Administrators, Chicago, Specializations of the Graduate Nurse
- Dr. Mario García Montreuil, Postgraduate Studies in Nursing in Mexico
- Mr. Fred A. McNamara, chief Business Management Section, Budget Bureau, Washington, Economics in the Hospital
- Dr. Demófilo González, Jefe de la Consulta Externa del Hospital del Niño Mexico, Organization of the Outpatient Department
- Dr. Carlos Gómez del Campo, Jefe del Depto. de Fisioterapia del Hospital Central Militar, Organization of the X-Ray and Physiotherapy Department
- Dr. Luis Gutiérrez Villalón, Jefe de Laboratorios del Hospital del Niño, Organization of the Clinical Laboratory
- Dr. Alberto Mejía, Medicinas y Drogas—Distribución y Manejo
- Mr. Walter Dashiell, senior sanitary engineer, Caribbean Unit, Pan American Sanitary Bureau, Guatemala, Sanitary Engineering
- Mr. Luis Villaseñor, superintendente del Hospital del Niño Mexico, Physical Plant and Maintenance
- Dr. George C. Dinnin, assistant coordinator Office of the Coordinator of Inter-American Affairs, Washington, Military Hygiene
- Dr. Alfonso Cabrera, director del Hospital Central Militar de la Secretaría de la Defensa Nacional Mexico, Organization of Hospital Militar
- Dr. George Baehr, chief medical officer, Office of Civilian Defense, Washington, Hospitals During the War and Postwar Periods
- Dr. Ramon del Villar, Military Hygiene in Mexico
- Drs. Manuel Martínez Baez, subsecretario de Salubridad y Asistencia and Warren I. Draper, assistant to the surgeon general U. S. Public Health Service, Washington, Hospitals in the Public Health Panorama (a symposium)
- Maria Elena Rincón, director of Medical Social Service, Hospital Infantil Mexico, Medical Social Service and the Hospital
- Miss Edith Baker, principal consultant, Medicosocial Service Children's Bureau, Washington, Medical Social Service in the Community
- Dr. Salvador Zubiran, consultor y supervisor Técnico de Hospitales de Mexico is director of the institute and Dr. Gustavo Biz, secretario de Salubridad y Asistencia, is president of the executive committee.

**Care of Rubber Workers**—In Honduras it has been decided to extend the medical care of rubber workers for another six months, the only change being that the Rubber Development Corporation will no longer be responsible for provision of lodging and food for medical aides employed by the service.

**Cholera Disease**—A venereal disease program was recently launched in Tegucigalpa, Honduras. A clinic will occupy space in the health center building now being constructed there.

**New Construction**—A public health center has been opened in Cholulucá, Honduras, and one in Trujillo. Construction is

going forward on a health center and ministry of health building in Paraguay. A new center has started operation in Encarnación and one is under construction in Villarrica, Paraguay.

**Personal**—Dr. Thomas Fort Sellers, special consultant to the Institute of Inter-American Affairs, left Atlanta, Ga., on November 9 for Bogotá, Colombia, where he will study the present organization of the National Institute of Hygiene in Colombia and prepare a report thereon for submission to the minister of labor, health and social welfare of the Colombian government.

**Malaria**—An epidemic of malaria occurred in Tegucigalpa, Honduras. A search for the source of breeding of malaria bearing mosquitoes revealed an extensive area in the La Granya section of Tegucigalpa. A malaria survey was made in the Hernandarias region of the upper Parana River recently in connection with the plan of the Paraguayan government to locate a resettlement colony there. Brazil plans to increase its production of pyrethrum, which is used to "bomb" malaria carrying mosquitoes and other insects.

**Tuberculosis**—The office of the coordinator of Inter-American Affairs announced that the Inter-American republics are intensifying their campaigns against tuberculosis, which is second only to malaria as a "killer" in Spanish America. Special agencies have been created to cooperate with the Institute of Inter-American Affairs, and hospitals, health centers and dispensaries are being constructed to expand the anti-tuberculosis programs. Mobile X-ray units are being used and health personnel is being trained especially for the work. In many areas existing facilities for the treatment and prevention of malaria are being used for antituberculosis work, pending the construction of health centers. In Honduras the cooperating Servicio Cooperativo Interamericano de Salud Pública has established a new tuberculosis dispensary at Tegucigalpa and is building other sanatoriums. A visiting nurse service has been created and clinics organized to serve as diagnostic units. El Salvador's national department of health maintains tuberculosis dispensaries at San Salvador and Santa Ana, with additional control work carried out in health centers established by the Salvadorean Servicio Cooperativo. A mobile X-ray unit is making a systematic survey of tuberculosis in a large area of the central American republic, with full time graduate nurses supplementing the work by running down cases and sources of infection. Nicaragua has a special administrative division for tuberculosis work, with nurses' training as one of its most important objectives, in cooperation with the Servicio Cooperativo. Additional control measures for Nicaragua will include X-ray equipment at the National Health Department's clinic in Managua, a 12 bed tuberculosis pavilion at the San Pablo Hospital in Bluefields, a 50 bed pavilion attached to the Managua General Hospital and a smaller one at the San Juan de Dios Hospital at Granada. A public health education project to control the disease has been launched. Bolivia, Colombia and Ecuador are making progress in reducing the death rate from tuberculosis through the cooperative efforts of the Institute of Inter-American Affairs and the cooperating Servicio in those countries. In Bolivia the Servicio Cooperativo is formulating a program for tuberculosis control on a nationwide scale. Work has been started in Colombia with intensive campaigns against the disease in Buenaventura, Isthma and other communities, while Ecuador's Servicio Cooperativo is building a 300 bed hospital at Guayaquil. Chile and Peru likewise have drawn up plans for tuberculosis hospitals.

**Public Health**—A new children's clinic has been established in Guatemala to train Guatemalan nurses to be sent to other parts of the country as a public health measure. It is expected that their activities, when trained, will assist in the reduction of the infant mortality rate in Guatemala.

### CORRECTION

**Freedom from Infection Around Pin Sites**—In the review of "Manual of Fractures Treatment by External Skeletal Fixation," by C. M. Shaar, Captain, Medical Corps, U. S. Navy, and Frank P. Kreuz Jr., Lieutenant Commander, Medical Corps, U. S. Navy, published in THE JOURNAL, November 27, page 871, the statement appears that the authors have had infection from pins in 157 consecutive cases. The word "not" was unfortunately omitted. The authors have not had infection from pins in 157 consecutive cases.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Nov 6, 1943

#### Reforms in Medical Education

In a letter to the London *Times* Lord Moran, president of the Royal College of Physicians, states that a committee of the college has been engaged in a survey of medical education and is concerned because we are always adding to the curriculum while nothing is ever taken away. Impossible demands are made on the student's time, he is bewildered by hours of listening. The habit of reflection is stamped out by a ceaseless drill of memorizing facts, so that even if he has a disposition to think for himself he is hurried out of it. Recently two committees of the college have issued reports which seek to foster a new way of looking at things. A committee on social and preventive medicine recommends the immediate setting up of professional and lay committees within the medical schools to strengthen the "almoner's department" for the proper understanding of the patient's needs rather than of his means. The failure of many clinical staffs to consult the almoner about their patients is a prevailing defect. It should be part of every clinical examination to search closely into the influences of social and economic factors, and hospital physicians and surgeons should set aside an hour for interviewing relatives and talking about the patient's illness. Hospitals should have a 'humanity department' to arrange for a more sympathetic reception of patients and their families, better facilities for lodging the relatives of dying patients and improved bed accommodations so that no patient shall be allowed to die in an open ward. The course of public health in the medical schools should concentrate on social and preventive medicine and bring the student into close contact with the appropriate organizations in the community.

A committee on psychologic medicine refers to the shortcomings in psychiatric training. Newly qualified doctors should be trained to deal with common psychiatric problems. Study of normal psychology should precede the period of clinical teaching. At the beginning of the first clinical year there should be an introductory course on the psychiatric aspects of clinical medicine. There should be a systematic course on psychiatry throughout the clinical period in which psychiatric outpatients, psychiatric centers, visits to mental institutions child guidance clinics and pediatric outpatient departments should play a part. Psychiatry and preventive medicine are beginning to find common ground in social study. Skilled assessment of the home and working conditions is frequently necessary. A clinician attached to the department of preventive medicine should therefore be appointed as supervisor of social studies to work in cooperation with all clinical departments.

#### The Health of Nurses

A committee of King Edward's Hospital Fund for London, under the chairmanship of Sir Charlton Briscoe, has drawn up a memorandum of minimum standards for care of the health of hospital nurses. It is recommended that a physician should be appointed for the nursing staff, whose responsibilities should not be limited to treatment of the sick but relate primarily to maintaining a good standard of health. Hospitals should require a detailed medical certificate with full family history from a nursing candidate's own doctor. A medical examination including x-ray examination of the chest and hemoglobin estimation, should take place before or on admission. This should be repeated within six months of admission to the preliminary training school, at the end of the first year and annually there-

after. Records of these examinations and of the nurse's weight, taken quarterly, should be kept by the physician. No candidate should be accepted for training unless she has been vaccinated against variola and immunized against diphtheria. (At present this practice is observed only in one fourth of the training schools.)

Important recommendations are made with regard to diet, accommodations and hours of duty. Nurses should have three good meals a day besides tea. Each nurse should if possible have a room to herself with a floor area of at least 100 square feet. Baths and lavatories should be provided in the ratio of one to five or six nurses. A ninety-six hour fortnight on duty should be the maximum. The practice of allowing girls under 18 years of age to nurse patients with tuberculosis and other unsuitable conditions is deplored.

A complaint is made in some quarters of difficulties encountered by the nurse who reports herself sick, and there seems to be a general feeling among nurses that it takes courage to report sick unless she had a high temperature or some other unmistakable sign or symptom. The committee feels that it is a short sighted and mistaken policy not to make certain that even minor ailments receive early attention. Nurses should be encouraged to report as soon as they feel unwell. All nurses off duty should receive immediate medical care and should not be allowed to return to duty until passed as fit by a physician. A sickbay should be set aside for the nursing staff.

#### Good Health of the Population in Wartime

The remarkable fact that on the whole the health of our people has improved, notwithstanding the restrictions of the greatest of all wars, is again borne out by the latest reports. In an address to the Provisional Council for Mental Health the minister of health, Mr. Ernest Brown, stated that the stress of the war had not led to any increase in the more serious mental disorders. Admissions to mental hospitals have been substantially below the prewar average. The most probable explanation is the improvement in employment due to the war. Mental disorders, except schizophrenia, generally occur in middle and later life, and money worries are one of the principal stresses which lead to the breakdown of unstable persons. We all have many anxieties in this war, but unemployment is not one of them. Our experience confirms that of the Spanish civil war, in which war stresses did not increase the incidence of psychoses. There has been an increase, however, the extent of which cannot yet be measured, in the incidence of neuroses. A problem confronting us is the care of service men and women discharged from mental units and neurologic centers. Some scheme of after-care must be provided for those who need it, so that they will not become a burden to themselves and to the community. Skilled help must be given them in their struggle to become adjusted to civilian life and to get the kind of work for which they are suited. The Provisional National Council for Mental Health has been asked by the government to cooperate with the Mental After-Care Association in organizing a scheme to provide after-care in the patient's own home after discharge from the hospital.

In his interim report for 1942 Dr. W. A. Daley, county of London medical officer, shows that the health of Londoners during the third year of the war was satisfactory. The public health services, which the heavy bombing of London in 1940 and 1941 never succeeded in seriously disorganizing, were able to deal with any difficulties created by the occasional raids of 1942. The figures of births and deaths were generally speaking favorable. In 1942 there were 40,654 births compared with 33,944 in 1941, and there were fewer deaths from all causes, 36,057 compared to 43,537 in 1941. There was also a reduction almost to the immediate prewar level in the death rate of infants. Maternal mortality—2.51 per thousand live births—was



lower than the figure for 1941, which was 305. On the other hand there was the usual war increase in tuberculosis, 5,540 cases compared to 5,252 in 1941. But there was a substantial reduction in the number of deaths from tuberculosis, 2,447 against 2,895 in 1941. Routine medical inspection showed that the health of school children was well maintained. An investigation into the value of giving children capsules containing vitamins A, B, C and D did not show any improvement in general health. This is evidence that their diet already contained a satisfactory supply of these vitamins.

### PALESTINE

(From Our Regular Correspondent)

Oct 15, 1943

#### Infectious Hepatitis in Palestine

An instructive report has been given by Dr. Max Leffkowitz concerning infectious hepatitis in Palestine during the years 1941-1943. In his report Leffkowitz stated that the endemic occurrence of infectious hepatitis in this country has long been a generally accepted fact. As soon as the cold season sets in (October-November), almost invariably the number of cases begins to increase. Toward the end of 1941 a particularly severe outbreak was recorded. The social importance of the disease will be gathered from the morbidity statistics of the Jewish Workers' Sick Fund. With its more than 180,000 members, it can be considered representative of the whole civilian population in Palestine. From January 1941 to March 1943, 5,380 people fell sick with jaundice. This figure includes 3,887 cases during the epidemic period which started in July 1942. The statistics available, however, based on reported cases give only minimum data, and the morbidity rate can be estimated on a conservative basis as 4 per cent for the whole period.

A few cases in which hepatitis runs its course without the accompaniment of jaundice are a common occurrence. But as the source of data concerning this "hepatitis sine ictero"—a not very clearly outlined syndrome—are the private observations of a number of general practitioners, their number can only be estimated, so it must be supposed that for every 10 cases with jaundice 1 occurs without that symptom.

The incubation period of the jaundice, according to observations during the last epidemic, was twenty-one to thirty-one days. The danger of infection was apparently greatest in the first week after the outbreak of the disease. The average duration of the jaundice was twelve to fourteen days. Milder and more severe cases, lasting for four and more months, have been observed. Generally, jaundice disappeared without residue. Sometimes a sensitiveness in the region of the liver and urobilinuria were present for years after the acute illness. Immunity obviously takes place after the first attack of the jaundice, since recurrences have never been reported.

Clinically, no differentiation between the endemic and the sporadic type has so far been possible. As to the mode of transmission, all the evidence is in favor of direct contact, but there may also be communication through the agency of healthy carriers or abortive cases, probably by means of droplet infection. The infection usually develops where large crowds are gathering, particularly in the communal settlements and in the children's houses attached to them.

A special disposition toward jaundice was found among new immigrants, independent of age and sex. Children were more affected only when living in special children's houses. The disease took a more severe course during pregnancy, causing miscarriages and even deaths. Thus during the course of an epidemic in a country settlement, among 1,600 people 120 were attacked (7.5 per cent), while 7 of 8 pregnant women present there at that time contracted the infection, which in 4 led to abortion.

#### New Cutaneous Test in Bacillary Dysentery (Flexner)

At a meeting in Jerusalem in August, F. Dreyfuss and J. Gurevitch gave a short outline of their work with serologic examination and a cutaneous test in bacillary dysentery (Flexner). They discussed the difficulties usually encountered in diagnosis of bacillary dysentery, especially in chronic cases, in which cultures of the stools are rarely positive. After reviewing the controversial opinions of several authorities on serologic tests as an aid in laboratory diagnosis of bacillary dysentery and in detection of carriers, they deal with their own experience in this field, assuming a titer of Flexner agglutination 1:100 as suggestive of a previous infection. In order to improve the diagnostic results they have devised a test of cutaneous sensitivity to *Bacterium flexneri* vaccine, which is performed by injecting 0.1 cc. of a vaccine containing 50,000 organisms per cubic centimeter into the skin. An infiltration and swelling accompanied by intense reddening of the skin in a diameter of 3 to 4 cm or more after twelve to twenty-four hours is considered as a positive response and seems to indicate an infection by *B. flexneri*.

Both methods have been applied in 69 cases, including controls, together with the usual means of laboratory and clinical examination. The test was studied in definite cases of acute bacillary dysentery when its results were positive, whereas the controls gave negative results. Both diagnostic methods have, in their opinion, proved their usefulness.

#### The Development of Gametocytes from Extraerythrocytic Forms in *Plasmodium Gallinaceum*

S. Adler and J. Tchernomoretz, from the Department of Parasitology, Hebrew University, Jerusalem, reported in the September issue of the *Journal of the Palestine Jewish Medical Association* on the development of gametocytes from extraerythrocytic forms in *Plasmodium gallinaceum*. Adult fowls were given 150 mg of quinine hydrochloride daily after inoculation with *Plasmodium gallinaceum* by the bites of *Aedes aegypti*. When the red cells showed a sufficient infection with small nonpigmented parasites the quinine was stopped. Thus the extraerythrocytic forms were the only possible source of these parasites in the red cells.

As the result of studies of the development of the parasites in the red cells after the cessation of quinine administration the authors stated that after twenty-seven and one-half hours the young gametocytes could be recognized and their maximum size is completed before the first cycle of erythrocytic schizogony. The extraerythrocytic forms therefore produce merozoites, which invade red cells and develop directly into gametocytes.

#### The Polish Golden Cross for Merit for Prof. I. J. Kligler

Prof. I. J. Kligler, head of the Department of Hygiene of the Hebrew University, was recently decorated with the Polish Golden Cross for Merit. The award has been made in recognition of Professor Kligler's services to Polish refugees in supplying them with typhus vaccine prepared in his department.

### Marriages

ALBERT FRAWLEY JACKSON JR., Eutaw, Ala., to Miss Maurice Brown of Fort Worth, Texas, in October.

FRANCIS A. LIEBERMAN, Allentown, Pa., to Miss Kathryn R. Ryan at Catasauqua, October 30.

THOMAS VIRGIL MATTHEWS to Miss Eleanor Adele Rhodes, both of Atlanta, Ga., October 9.

FRANK R. KING, Greenriver, Utah, to Miss Eldarene Settlemier of Duchesne, August 22.

ARTHUR N. KITENPLOW to Mrs. Elsie Jefferys, both of Aurora, Ill., October 12.

## Deaths

**Thomas Andrew Storey** ✶ Atlanta, Ga., Harvard Medical School, Boston, 1905, assistant professor of hygiene at the Stanford University, from 1902 to 1906, professor and director of hygiene and physical education from 1926 to 1929 and general director of the school of hygiene and physical education from 1929 to 1940, organized the department of hygiene, associate professor of physical instruction and training from 1906 to 1910, professor of physical instruction and hygiene from 1910 to 1913 and professor of hygiene from 1913 to 1926 at the College of the City of New York, served as president, Northern California Public Health Association, fellow of the American Association for the Advancement of Science, American Academy of Physical Education, American Public Health Association and the American Physical Education Association, member of the American Physiological Society, Society of Experimental Biology and Medicine and the San Francisco Academy of Medicine, president of the Society of Directors of Physical Education in Colleges, 1908-1909, and the American Student Health Association from 1925 to 1927, member of the hygiene reference board of the Life Extension Institute, state inspector of physical training with military training commission, Albany, from 1917 to 1921, secretary general of the fourth International Congress on School Hygiene and editor of its proceedings, chairman of the National Conference on College Hygiene in 1931, executive secretary of the U S Inter-Departmental Social Hygiene Board, Washington, D C, from 1918 to 1921, since 1940 special consultant, American Social Hygiene Association, author of the New York state program and syllabus on physical training, in 1926 awarded the Luther Halsey Gulick Medal "for distinguished service in physical education and allied fields", died in the Crawford W Long Hospital October 27, aged 68, of coronary thrombosis and arteriosclerosis.

**Lyman Brooke Tibbets** ✶ Washington, D C, George Washington University School of Medicine, Washington, 1921, specialist certified by the American Board of Otolaryngology, clinical instructor in otolaryngology at his alma mater, associate surgeon, Episcopal Eye, Ear and Throat Hospital, visiting otolaryngologist, Glenn Dale Sanatorium, Glenn Dale, Md, Gallinger Municipal and the George Washington University hospitals, member of the medical council and otolaryngologist, Sibley Memorial Hospital, where he died suddenly September 19, aged 49, of cerebral hemorrhage.

**Martin Luther Arthur**, Patoka, Ind., Medical College of Indiana, Indianapolis, 1898, member of the Indiana State Medical Association, a captain in the medical corps of the U S Army during World War I on the staffs of the Gibson General Hospital, Princeton, and the Protestant Deaconess Hospital, Evansville, president of the Patoka National Bank, died October 20, aged 67, of ruptured aortic aneurysm.

**Charles Augustus Atwood**, Taunton, Mass., Harvard Medical School, Boston, 1883, member of the Massachusetts Medical Society, medical examiner in the first Bristol district, member of the staff of the Morton Hospital and a consultant of the Taunton State Hospital, died October 10, aged 82, following an operation on the prostate gland.

**Ned Alvin Balding** ✶ Lincoln, Ill., St. Louis University School of Medicine, 1912, past president of the Logan County Medical Society, served during World War I, on the staffs of the Evangelical Deaconess and St. Clara's hospitals, died suddenly October 6, aged 57.

**Frank L Barnes** ✶ Houston, Texas, College of Physicians and Surgeons, Baltimore, 1896, a member of the founders group of the American Board of Surgery, member of the Southern Surgical Association and the American Association for the Surgery of Trauma, fellow of the American College of Surgeons, veteran of the Spanish-American War, visiting surgeon, St Joseph's Infirmary, died October 2, aged 71, of coronary occlusion.

**Edwin George Henry Beck**, Atlanta, Ga., University of Michigan Homeopathic Medical School, Ann Arbor, 1903, died October 8, aged 65.

**Victor Biddle**, Steubenville, Ohio, College of Physicians and Surgeons, Baltimore, 1909, member of the Ohio State Medical Association, served during World War I, on the staff of the Ohio Valley Hospital, died October 3, aged 68, of angina pectoris.

**Albert Sven Bjornson**, Denver, University of Denver Medical Department, 1886, died in a Grand Junction, Colo., hospital October 6, aged 93, of a fractured hip received when struck by an automobile last July.

**William Waldo Blackman**, Brooklyn, New York, Homeopathic Medical College, New York, 1877, medical director of the Prospect Heights Hospital, vice chairman, board of trustees, New York Medical College, died October 20, aged 87, of chronic myocarditis.

**Thomas Cleveland Brewer**, Dallas, Texas, Southern Methodist University Medical Department, Dallas, 1912, on the staff of St. Paul's Hospital, died October 11, aged 55, of cerebral hemorrhage.

**Edward Lyman Brown** ✶ Bloomington, Ill., Northwestern University Medical School, Chicago, 1894, for many years a member of the board of education, died October 10, aged 79, of heart disease.

**Thomas Edward Brown**, Brooklyn, University of the City of New York Medical Department, New York, 1890, died October 8, aged 75, of carcinoma of the stomach.

**Youra Spence Brown**, Halls, Tenn., Emory University School of Medicine, Atlanta, Ga., 1917, served overseas during World War I, died in the Baptist Memorial Hospital, Memphis, October 6, aged 51, of coronary thrombosis.

**Arthur Earnest Burkhardt** ✶ Tipton, Ind., Indiana University School of Medicine, Indianapolis, 1908, a member of the examining board of the Selective Service of Tipton County, part owner of the Emergency Hospital, on the staff of the Mercy Hospital, Elwood, where he died October 19, aged 67, of coronary occlusion and acute pulmonary edema.

**Robert Golden Carlin**, New York City, Jefferson Medical College of Philadelphia, 1902, member of the Medical Society of the State of New York, a captain in the medical corps of the U S Army during World War I, member of the executive committee, alumni association of Jefferson Medical College, consulting surgeon, Downtown Hospital, surgeon, Midtown Hospital, where he died October 3, aged 65, of cerebral hemorrhage.

**Jonas Whittier Carlisle** ✶ Robinson, Ill., Chicago Physio-Medical College, 1897, for many years a member of the grade and high school boards of education, chairman of the board of health, charter member of the Rotary Club, died in the Robinson Hospital October 8, aged 75, of uremia following an operation for acute intestinal obstruction.

**Louis Peter Casper**, Louisville, Ky., University of Louisville Medical Department, 1904, member of the Kentucky State Medical Association, on the staff of SS Mary and Elizabeth Hospital, where he died October 12, aged 61, of acute dilatation of the heart.

**George Cerio**, Middletown, R I., Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1891, died in the Newport Hospital October 28, aged 77.

**Thomas Horace Cheatham** ✶ Fort Worth, Texas, University of Tennessee Medical Department, Nashville, 1903, chief examiner for the Selective Service Board number 6, died October 11, aged 69, of coronary occlusion.

**Thomas Vincent Connolly** ✶ Paterson, N J, Georgetown University School of Medicine, Washington, D C, 1913, specialist certified by the American Board of Otolaryngology, fellow of the American College of Surgeons served during World War I, a member of the fire and police commission chief otolaryngologist, St. Joseph's Hospital where he died October 21, aged 53, of embolism following an operation.

**Aurelien Constantineau**, Woonsocket R I, School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal 1895, member of the Rhode Island Medical Society, on the staff of the Woonsocket Hospital, died October 13, aged 73, of myasthenia gravis.

**Harold Monford Cox**, Indianapolis, Indiana University School of Medicine, Indianapolis, 1921, served during World War I member of the Indiana State Medical Association on the staff of St. Vincent's Hospital, where he died October 14, aged 51, of cerebral hemorrhage.

**Vance Monroe Cox** ✶ Bristol, Va., University of Nashville (Tenn.) Medical Department, 1909, served as medical examiner for the induction center at Abingdon on the staff of the King's Mountain Memorial Hospital died in the Johnston Memorial Hospital Abingdon, October 15, aged 63, of heart disease.

**W O'Connor Cox**, St Paul, Va, University College of Medicine, Richmond, 1912, director of St Paul National Bank, died October 20, aged 58, of angina pectoris

**William Eldridge Cram**, Swedesboro, N J, University of Toronto Faculty of Medicine, 1894, member of the Medical Society of New Jersey, past president of the Gloucester County Medical Society, died October 1, aged 71, of angina pectoris

**Humphrey W Curtis**, Hilton Village, Va, Medical College of Virginia, Richmond, 1901, died in the Elizabeth Buxton Hospital, Newport News, October 19, aged 66

**William Henry Cushing**, Southington, Conn, Bellevue Hospital Medical College, New York, 1892, for many years school physician and health officer, served on the board of education and as president of the board of water commissioners, on the staffs of the Meriden Hospital, Meriden, and the Bradley Memorial Hospital, died in St Mary's Hospital, Waterbury, October 1, aged 74, of sarcoma of the bladder

**Theodore Diller**, Pittsburgh, University of Pennsylvania Department of Medicine, Philadelphia, 1886, formerly associate professor of neurology at the University of Pittsburgh School of Medicine, member of the Medical Society of the State of Pennsylvania and the American Neurological Association, for many years on the staff of St Francis Hospital, where he died October 6, aged 80, of heart disease and pneumonia

**William Bernard Donahay**, Washington, D C, Georgetown University School of Medicine, Washington, 1927, on the staff of the Providence Hospital, where he died October 2, aged 41, of uremia

**Francis Marion Dwight**, Wedgfield, S C, University of Maryland School of Medicine Baltimore, 1889, member of the South Carolina Medical Association, died October 17, aged 82

**B Franklin Eikenberry**, Peru, Ind, the Hahnemann Medical College and Hospital, Chicago, 1896, member of the Indiana State Medical Association past president of the Miami County Tuberculosis Society, a member of the Rotary Club served on the staff of the Dukes-Miami County Memorial Hospital died October 23, aged 73, of carcinoma of the bladder with metastases

**McPherson Gregorie Elliott**, Beaufort S C, Medical College of the State of South Carolina Charleston, 1898, formerly associated with the U S Public Health Service, died October 3, aged 71

**Zenas Horace Ellis**, New York, University of Vermont College of Medicine, Burlington, 1920, member of the Medical Society of the State of New York and the American Academy of Ophthalmology and Otolaryngology, specialist certified by the American Board of Ophthalmology, formerly instructor in anatomy at his alma mater, died in the Doctors Hospital October 20, aged 48, of ruptured esophageal varix

**John Meeks Firmin** Ⓢ Findlay, Ohio University of Wooster Medical Department, Cleveland, 1897, served overseas during World War I, chief of staff, Findlay Hospital, died October 4, aged 70, of acute myocarditis

**Matthew Fishman**, Brooklyn, Eclectic Medical College, Cincinnati, 1920, died October 12, aged 50

**Lewis Fox Frissell** Ⓢ New York Columbia University College of Physicians and Surgeons, New York, 1900, professor of clinical medicine at his alma mater, fellow of the American College of Physicians, consulting physician, North Country Community Hospital, Glen Cove, N Y, and St Luke's Hospital, a director of the Fifth Avenue Bank, died in the Doctors Hospital October 24, aged 71, of cerebral hemorrhage

**Henry J Johnston**, Tontogany, Ohio, Toledo Medical College, 1900, member of the Ohio State Medical Association, a member of the board of health of Wood County, a trustee of the Bowling Green State University, surgeon for the Baltimore and Ohio Railroad, on the staff of the Toledo Hospital, where he died October 30, aged 67, of coronary thrombosis

**Charles Bowden Jones**, Summerhill, Pa, Medico-Chirurgical College of Philadelphia, 1906, member of the Medical Society of the State of Pennsylvania, for many years adviser of the local board of health and member of the Summerhill Borough Council, served as a member and president of the school board, died in the Conemaugh Valley Memorial Hospital, Johnstown, October 9, aged 68, of coronary occlusion

**Major Osceola Jones**, Brooklyn, Howard University College of Medicine, Washington, D C, 1929, member of the Medical Society of the State of New York, died October 8, aged 43

**John Hays Lee**, Cannelton, Ind, Kentucky School of Medicine, Louisville, 1885, member of the Indiana State Medical Association, died in St Anthony's Hospital, Terre Haute, October 27, aged 86

**Gordon Lindsay**, Freeport, N Y, Columbia University College of Physicians and Surgeons, New York, 1905, also a pharmacist, on the staffs of the Nassau Hospital, Mineola, and the Meadowbrook Hospital, Hempstead, died October 19, aged 68, of melanosisarcoma

**William Armstrong Lindsay** Ⓢ Niles, Ohio, Ohio Medical University, Columbus, 1898, on the staff of the Warren City Hospital, Warren, died in the Youngstown Hospital, North Side Unit, October 24, aged 69, of carcinoma

**Arthur Singleton Love**, Ballinger, Texas, University of Texas School of Medicine, Galveston, 1897, part owner of the Halley and Love Sanitarium, where he died October 12, aged 71, of uremia

**William Johnson Manning**, Washington, D C, National University Medical Department, Washington, 1903, for many years medical officer of the government printing office, major, medical corps, U S Army, during World War I, died in St James Hospital, Newark, October 27, aged 73, of diabetes mellitus, myocardial degeneration and arteriosclerosis

**Nelvin Merritt Moore**, Rock Island, Ill, Rush Medical College, Chicago, 1895, died October 24, aged 74, of angina pectoris

**Charles Robert Nelson**, Jamestown, Kan, Kansas City (Mo) Hahnemann Medical College, 1904, member of the Kansas Medical Society, served as health officer of Washington County and coroner of Wood County, formerly on the staff of St Joseph's Hospital, Concordia, died October 16, aged 65, of Parkinson's disease

**James Deering Nutting**, Hallowell, Maine, Baltimore University School of Medicine, 1903, member of the Maine Medical Association, served as chairman of the school board and trustee of the Hubbard Free Library, died in the Maine General Hospital, Portland, October 24, aged 68, of heart disease

**Oscar Burton Ormsby** Ⓢ Murphysboro, Ill, St Louis College of Physicians and Surgeons, 1897, president of the Murphysboro park commission, member of the Rotary Club and chamber of commerce, on the staff of St Andrew's Hospital, where he died October 24, aged 67, of cerebral hemorrhage

**Walter Harburt Paine**, Sealy, Texas (licensed in Texas under the Act of 1907), served on the staffs of the Burns and Lutheran hospitals, died October 14, aged 78, of myocardial degeneration

**John Thomas Peyton**, White House, Tenn, University of Tennessee Medical Department, Nashville, 1888, died October 5, aged 86

**Fred William Phillips**, River Rouge, Mich, Detroit College of Medicine, 1913, member of the Michigan State Medical Society, on the visiting staffs of the Providence and Delray General hospitals, Detroit, and the Wyandotte General Hospital, Wyandotte, where he died October 23, aged 60

**Philip Russell Polk**, Morgan City, Miss, Chattanooga (Tenn) Medical College, 1901, served during World War I, died October 11, aged 64

**Elisha Pender Porter**, Brooklyn, Columbia University College of Physicians and Surgeons, New York, 1900, served on the staff of the Swedish Hospital, died October 23, aged 68, of a self-inflicted bullet wound

**William Newton Pringle**, Johnstown, Pa, Western Pennsylvania Medical College, Pittsburgh, 1889, member of the Medical Society of the State of Pennsylvania, for many years on the staff of the Conemaugh Valley Memorial Hospital, died October 20, aged 87

**John G Puryear**, Mayfield, Ky, Kentucky School of Medicine, Louisville, 1903, served in France during World War I, died October 22, aged 67

**Conner Ouerbacher Reed** Ⓢ Bellingham, Wash Miami Medical College, Cincinnati, 1904, served during World War I, colonel, medical reserve corps, U S Army, not on active duty, served as a member of the board of health and board of education of Bellingham, formerly county coroner, on the staffs of St Luke's Hospital and St Joseph's Hospital, where he died October 9, aged 62, of heart disease

Omar Hollingsworth Rees Ⓢ Knightstown, Ind., Medical College of Indiana, Indianapolis, 1900, on the staff of the Henry County Hospital, Newcastle, died October 24, aged 76, of coronary occlusion

James Jefferson Reitz, Walnutport, Pa., Hahnemann Medical College and Hospital of Philadelphia, 1903, also a minister, died October 28, aged 83, of coronary disease

Barton D Rhodes, Riverside, Ga., Georgia College of Eclectic Medicine and Surgery, Atlanta, 1906, died October 6, aged 64

Calvin M Rice, Ravenna, Ohio, Western Reserve University Medical Department, Cleveland, 1881, died in the Robinson Memorial Hospital October 24, aged 86, of cerebral hemorrhage and pulmonary thrombosis

Simplicio Righi New York Regia Università degli Studi di Bologna, Facoltà di Medicina e Chirurgia, Italy, 1897, died in St Vincent's Hospital October 16, aged 73, of tumor of the bladder

Charles William Ryan, Battle Creek, Mich. University of Michigan Homeopathic Medical School Ann Arbor, 1896, veteran of the Spanish-American War formerly mayor, died October 15, aged 70

Roland Eugene Schoen, Beaver Dam Wis., Rush Medical College, Chicago, 1903 served as health officer of Beaver Dam and adjoining townships elected the first chief of staff at St Joseph's Hospital where he died October 9, aged 65 of cardiovascular renal disease

William E Schoonover, Springfield Ohio Pulte Medical College Homeopathic Cincinnati, 1885, died October 9, aged 85

Frank Carpenter Shaut, Savona N Y Syracuse University School of Medicine, 1905 since 1927 health officer of the village of Savona on the staff of the Bath Memorial Hospital, Bath, died October 14 aged 65, of heart disease.

Walter Taylor Sheets, Salt Lake City Columbia University College of Physicians and Surgeons, New York, 1926 formerly on the staff of the Dr W H Groves Latter-Day Saints Hospital, served on the staffs of various Veterans Administration facilities died in Washington, D C, October 18 aged 40, of coronary heart disease with thrombosis

Richard Cotton Shepherd Ⓢ Scranton Pa Jefferson Medical College of Philadelphia, 1906 chief medical inspector for the city school district, died October 30 aged 65

MacCormick Smetters, Waverly Ill Bennett College of Eclectic Medicine and Surgery, Chicago, 1898, Rush Medical College, Chicago, 1900 member of the Medical Association of Montana, died in St John's Hospital, Springfield October 19, aged 66, of carcinoma of the prostate with metastases and secondary anemia

Charles Francis Snow, Adamson Okla. College of Physicians and Surgeons Dallas, Texas, 1906, died at Beaumont, Texas in October, aged 69 of coronary occlusion

Jesse Greene Storie, Grundy, Va., Tennessee Medical College, Knoxville, Tenn., 1898 member of the Medical Society of Virginia, died October 20 aged 75, of pneumonia

James Preston Stubblefield, St Louis Hospital College of Medicine, Louisville, Ky., 1906, for many years a minister, died October 25 aged 88, of uremia and chronic nephritis

Thomas J Taylor, Rentz, Ga., University of Georgia Medical Department, Augusta 1894, died August 26, aged 74

Clara Louise Hunt Thompson, Boston, College of Physicians and Surgeons, Boston, 1915 member of the Massachusetts Medical Society, served on the staff of the New England Hospital for Women and Children, died September 15 aged 72, of heart disease

Charles Willis Tidball Ⓢ Independence, Iowa, Jefferson Medical College of Philadelphia 1913 served during World War I for six years a member of the board of education on the staff of the Peoples Hospital, where he died September 24 aged 55, of coronary occlusion

Robert Bruce Tilley, Plato Mo., University of Missouri School of Medicine, Columbia, 1899, member of the Missouri

State Medical Association, died in the Louise G Wallace Hospital, Lebanon, October 12, aged 70, of pneumonia

Benjamin Torrens, New York, College of Physicians and Surgeons, New York, 1893, on the staff of the New York Polyclinic Medical School and Hospital, died October 23, aged 71

John Edward Vassallo, Malden, Mass., College of Physicians and Surgeons, Boston, 1917 died August 27, aged 63

Fortunato Vitanza Ⓢ Philadelphia, Regia Università degli Studi di Roma, Facoltà di Medicina e Chirurgia, Italy, 1907, on the staff of the Lankenau Hospital, where he died October 30, aged 63, of cerebral hemorrhage.

Charles E Wallace, New Sharon, Iowa, Miami Medical College, Cincinnati, 1884, member of the Iowa State Medical Society a member of the school board and postmaster, died September 24, aged 85, of cerebral thrombosis

Frank J Williams, Butte, Mont., Chicago College of Medicine and Surgery, 1908, member of the Medical Association of Montana, city physician, on the staff of St James Hospital, died October 22, aged 59, of coronary thrombosis

Sam H Williamson Ⓢ Harrah, Okla. Memphis (Tenn) Hospital Medical College, 1904, died in Oklahoma City September 14, aged 64

Anna R Grace Flanders Wilson, Morristown, N J, New York Medical College and Hospital for Women Homeopathic, New York, 1899, died September 13, aged 66, of static pneumonia chronic myocarditis, myelitis and paraplegia

William Lester Wilson, Santa Cruz, Calif., Medical College of Indiana, Indianapolis 1887, died in the Santa Cruz Hospital October 14, aged 82

Eugene J Wolff, Waukomis, Okla., Missouri Medical College, St Louis, 1894 member of the Oklahoma State Medical Association, past president of the Garfield County Medical Society, died in the Enid General Hospital, Enid, October 30, aged 74, of coronary thrombosis

Harry Wells Woodward, Washington D C, Hahnemann Medical College and Hospital of Philadelphia, 1891, died in the Garfield Memorial Hospital October 11 aged 75, of injuries received when struck by a taxicab

Wade Woodward, Decatur Ga University of Georgia Medical Department, Augusta, 1899, died September 26 aged 75 of heart disease.

Asa Wright, San Antonio, Texas, University of Oklahoma School of Medicine, Oklahoma City, 1913, veteran of the Spanish-American War, died October 23 aged 70 as the result of a fall

Eugene Cushman Wylie, Ⓢ Boston Harvard Medical School, Boston 1895 an Affiliate Fellow of the American Medical Association for many years a member of the staff of the Childrens Hospital died September 15, aged 71

Harry M Yancey, Mays Lick, Ky Medical College of Ohio Cincinnati, 1896 served in the medical corps of the U S Army during World War I died in the Hayswood Hospital, Maysville September 17, aged 71, of cardiovascular disease and hypertension

Francis Albert Young, Montgomery, Texas Kentucky School of Medicine, Louisville, 1891 member of the State Medical Association of Texas at one time county health officer, died September 3, aged 90 of heart disease

## KILLED IN ACTION

Fay Broughton Begor, Tahawus N Y McGill University Faculty of Medicine, Montreal, Que., Canada, 1941 diplomate of the National Board of Medical Examiners interned at the Montreal General Hospital commissioned a lieutenant (jg) in the medical corps of the U S Naval Reserve on July 22 1942 and began extended active duty Sept. 1, 1942 decorated posthumously with the medal of the Purple Heart died in the South Pacific area September 9 aged 26 of multiple wounds and gas bacillus gangrene received in action.



LIEUT (jg) FAY B BEGOR (MC),  
USNR, 1916-1943

## Correspondence

### EPIDEMIC JAUNDICE

*To the Editor*—According to the observations of Dietrich (*Deutsche med. W'chenschr.* 68:1 [Jan. 2] 1942), catarrhal icterus and epidemic hepatitis are probably identical diseases of virus origin and, although their course is usually benign, they may lead to cirrhosis or to acute yellow atrophy of the liver. In almost every war in the last hundred and fifty years epidemics of jaundice have been observed among soldiers. In the present as in previous wars it has been noted that this form of jaundice occurs chiefly during the fall and early winter months. An editorial in *THE JOURNAL* (November 6, p. 636) comments on apparently the same variety of epidemic jaundice observed among troops by Cameron and by Van Rooyen and Gordon. The disease is characterized by abdominal discomfort, an irregular type of fever, jaundice, clay colored stools, absence of leukocytosis and recovery. Animal inoculation experiments are negative.

At this moment and in this connection I think it is important to recall that, during a period of ten weeks commencing the middle of December 1919, 16 patients were admitted to Bellevue Hospital suffering from a variety of acute hemorrhagic jaundice (Symmers, Douglas, *Epidemic Acute Hemorrhagic Jaundice of Toxic Origin*, *THE JOURNAL*, April 24, 1920, p. 1153). Of this number 9 died—a mortality of 56.2 per cent. In 6 cases necropsies were done. Clinically and anatomically the disease presented features which, on the one hand, were similar to those of yellow fever and spirochetal jaundice and, on the other, to acute yellow atrophy of the liver. At the time it was a subject of remark that patients with so-called catarrhal jaundice were admitted to Bellevue Hospital during the period of the epidemic in numbers noticeably in excess of the routine experience of previous years, and the possibility was discussed that at least some of them were suffering from a mild form of the epidemic disease.

In 8 of the 16 cases blood from living patients was stained in films for spirochetes, but not one was found. Appropriate quantities of fresh blood or urine, or both, depending on the stage of the disease, were injected into guinea pigs in a further effort to determine the relationship of the disease, if any, to infective or spirochetal jaundice. The results were negative. Culture mediums inoculated with blood remained sterile, tests for heavy metals were negative, and no spirochetes could be demonstrated in sections of the liver and kidney impregnated according to the older method of Levaditi. Clinically the disease was divisible into two groups of cases. One group was characterized by jaundice of the conjunctivas preceded by lassitude and digestive disturbances. In the course of a few days jaundice became intense and was accompanied by hemorrhages—epistaxis, hematemesis, melena, hemorrhagic vesicles about the lips and chin and linear or splotchlike extravasations in the skin and visible mucous membranes, those in the skin corresponding to scratch marks, the pressure of bed clothing and other trivial injuries. By this time the patient was languid, drowsy or stuporous or irritable and restless, sometimes irrational. Moderate irregular fever was the rule, and the stools were clay colored. The majority of the patients complained of pains in different localities, and even though stupor was pronounced, signs of tenderness could be elicited by pressure on various parts of the body. In 2 cases epigastric pain and tenderness and vomiting together with jaundice and clay colored stools seemed to point to obstructive disease of the biliary drainage system, and the abdomen was opened, but no obstacle was found to the escape of bile from the common duct. Post mortem, in addition to jaundice and hemorrhages, the disease was attended by cloudy swelling, by distention of the parenchyma cells of the liver and foci of

necrosis, and by cloudy swelling or necrosis of the tubular epithelium of the kidneys. The second group was marked by wild delirium and rapid death. Postmortem examination showed hemorrhagic and necrotic changes in the liver indistinguishable from those of acute yellow atrophy.

From experience at Bellevue Hospital I am led to the conclusion that there is a form of epidemic hemorrhagic jaundice in which the mortality is high and there is no spirochetal infection, although virus infection cannot be denied and probably exists, and that the disease belongs in the same group as the so-called acute catarrhal jaundice and the epidemic hepatitis observed in more recent years by Dietrich and others in army hospitals.

DOUGLAS SYMMERS, M.D., New York.

General Director of Laboratories, Department  
of Hospitals, City of New York

### EPIDEMIC HEPATITIS

*To the Editor*—The editorial on epidemic hepatitis in *THE JOURNAL*, November 6, was of considerable interest to me. At Yale the records show that we have had three epidemics of jaundice in the past twenty-two years, the largest, of 119 cases, being in the academic year 1921-22, with 59 cases in 1935-36 and 89 cases in 1938-39. In the 1921-22 epidemic 63 cases had their onset within a fifteen day period in November. In 1935-36 22 cases occurred in January and February and 25 in April and May, and in 1938-39 40 cases occurred in the months of January and February 1939. In the intervening years the incidence has varied between 4 in 1942-43, when our student body was depleted, to 42, with an average of 22 cases a year and a median of 21.

A report of the 1921-22 epidemic was published by Hiscock and Rogers in *THE JOURNAL*, Feb. 18, 1922. There are great similarities between the disease which we attempted to describe and the clinical picture of epidemic hepatitis as recorded in the editorial referred to. We differ, however, in one respect, for the tender eyeballs and pain on movement which Cameron says are lacking we found in 20 per cent, and subsequent observation has led me to be suspicious of eventful development of jaundice in patients presenting these symptoms. It is often not true, but it has been a guide often enough to keep the suspicion alive.

Our cases in general were milder. The period of hospitalization was shorter and the boys seemed to recover successfully even though the icterus had not disappeared completely when they were discharged. There are variations in the severity of the disease in our group, and in the 1938-39 group a number were able to continue at class throughout their illness. These men had usually had very mild febrile and gastrointestinal symptoms a few days before and came in only after jaundice had developed, when they were apparently starting to feel better.

Those severely involved are pretty sick for a few days, with fevers up to 102 or 103 F., usually becoming normal in three to five days. It is possible, and has happened a number of times, for a man to be discharged from the infirmary with the diagnosis of "grip," go about his business for a day or so, apparently well, and then start having anorexia and nausea and be sent back to the infirmary with jaundice. Such cases have occurred, with the patient sick at home with the initial febrile attack and sent back here as recovered, only to develop the jaundice symptoms after arrival. In the severer cases vomiting, sometimes persistent, is more common than it would appear to be in Cameron's cases.

Frequently the initial febrile period is unaccompanied by any respiratory symptoms or signs. Many patients, however, have some evidence of a respiratory infection at or before the onset of fever or of the gastrointestinal symptoms. We have thought that frequently there was an upswing in the jaundice cases in



periods when colds were particularly prevalent. This seems to be true to this extent. In the years of jaundice epidemics respiratory infection is also unusually prevalent at the same time. The reverse is not true, however, and many months of high incidence of respiratory infection show nothing more than an occasional sporadic case of jaundice.

In epidemic times there are undoubtedly cases of the same malady without icterus. They seemed to be more prevalent as an epidemic period was waning. In all probability there are such cases sporadically, but they are much more difficult if not impossible, to recognize. There is a definite suggestion of similarity to infantile paralysis in these abortive cases and also in the continued occurrence of sporadic cases with epidemic conditions breaking out at times for reasons which remain obscure.

In the endemic stage, cases appear at long intervals and without any demonstrable relation to previous cases.

The length of the incubation period as stated in the editorial is much longer than the period we thought we found in 1921, namely from three to nineteen days, averaging about a week. Our evidence may not be conclusive, but that was the way it looked to us at the time.

ORVILLE F. ROGERS, M.D.,  
Yale University Department of Health  
New Haven, Conn.

#### POSTURE DURING EXAMINATION OF RAPID HEART

*To the Editor*—In the November 13 issue of *THE JOURNAL*, page 693, there appears a clinical observation on the rapid heart by Dr. L. S. Luton of St. Louis. In this communication Dr. Luton points out that he has been able to reduce the cardiac rate in cases of paroxysmal tachycardias by asking the subject to bend forward to at least a 90 degree angle.

I have also been using this procedure of stimulating the vagus by increasing intrathoracic pressure. Due credit for this observation should be given to Dr. Raymond L. Gregory of the Department of Internal Medicine of the University of Texas School of Medicine at Galveston. He mentioned in his lectures that an attack of paroxysmal tachycardia is frequently stopped completely or noticeably slowed when a patient bends over to tie a shoelace or other such act which involves a comparable change in position.

LOUIS L. FRIEDMAN, M.D., New Orleans  
Medical Resident, L. S. U. Medical School  
Division, Charity Hospital

*To the Editor*—I am in receipt of the copy of a letter sent you by Dr. Louis L. Friedman, medical resident, Louisiana State University Medical School concerning my article "Posture During Examination of Rapid Heart" in the November 13 issue of *THE JOURNAL*, in which he calls attention to the use of "bending" by Dr. R. L. Gregory of his school to stop a paroxysmal tachycardia attack (treatment).

In my article I specifically excluded this observation as follows: "While this procedure [bending] has been used along with a great many others to influence an attack of paroxysmal tachycardia, a survey did not disclose mention of the use of a 90 degree bend for the specific purpose of slowing the heart as an aid in its examination."

The purpose of my note was to invite the use of "bending" in the examination (not treatment) of rapid hearts of all kinds.

Dorland's Medical Dictionary, edition 19, 1941 describes Erben's reflex as "a slowing down of the pulse upon bending head and trunk strongly forward, said to indicate vagal excitability." Stedman's Medical Dictionary, edition 12, under Erben's phenomenon says "In neurasthenia, if patient squats or bends over for several slow heart beats occur."

L. S. LUTON, M.D., St. Louis

#### HYPERTENSION IN THE MILITARY SERVICE

*To the Editor*—In the editorial (*THE JOURNAL*, November 13, p. 702) titled "Hypertension in Military Service," excessive variability of the normal blood pressure was defined as a heralding sign of subsequent hypertension. It was emphasized that persons who show a transient rise in pressure when exposed to the emotional stress of a physical examination must be regarded as likely candidates for the disease.

Although this assertion may be true for young adults, there is mounting evidence to indicate that "vascular hyperreactivity" is a common finding among normal persons over the age of 40. In a recent report on the cold pressor response of 200 normal men between the ages of 40 and 69 years (*Ann. Heart J.* 26:398 [Sept.] 1943) I presented data which strongly suggest that the reactivity of the blood pressure normally increases appreciably with age. An increase in the response of the blood pressure with succeeding decades was observed in "hyporeactors" as well as in "hyperreactors." The incidence of hyperreaction moreover increased with age from 24.2 per cent in the fifth decade to 56.1 per cent in the seventh decade.

These observations indicate that a normal person may show little fluctuation in blood pressure in youth and considerable variability in blood pressure in middle age. Raab, using the stimulus of carbon dioxide inhalation, was among the first to note that the vasopressor response of normal subjects increases with age (*Ztschr. f. klin. Med.* 118:618, 1931). This rise in response he attributed to a corresponding increase in irritability of the cerebromedullary vasoconstrictor centers with advance of age.

In a study soon to be reported it will be shown that approximately 40 per cent of persons over 40 years of age whose pressures on first examination are below 140/85 are hyperreactors to the cold pressor test. Consequently the theory that such reactivity of the blood pressure per se is a precursor of permanent hypertension must be rejected for this age group. This conclusion appears all the more justified when it is considered that Hines's studies indicate that an initial blood pressure below 140/85 generally means that hypertension will not develop subsequently (*THE JOURNAL*, July 27, 1940, p. 271).

HENRY I. RUSSEK, M.D.,  
U. S. Marine Hospital  
Staten Island, N. Y.

#### AMPUTATED LIMBS AS SOURCE FOR NERVE GRAFT

*To the Editor*—The use of preserved cadaver nerve grafts has been suggested for bridging the gaps left in nerves following trauma or the excision of neuromas (Klenke, R. M., Woolsey, R. D. and de Rezende, N. T. Autopsy Nerve Grafts in Peripheral Nerve Surgery, *THE JOURNAL* October 16, p. 393). Cadaver material may not always be readily available and there might be medicolegal repercussions to making special incisions to obtain the grafts. It has occurred to me that a more convenient source of nerve material would be from amputated extremities. Supracondylar amputation of the lower extremity is frequently carried out for dry gangrene or other noninfected lesions of the foot, and good sized pieces of nerve could be obtained and placed in preservative right in the operating room. This would obviate the necessity of begging pathologists and relatives for the tissue.

CONRAD R. LAM, M.D.,  
Division of General Surgery,  
Henry Ford Hospital  
Detroit.

# GRADUATE CONTINUATION COURSES FOR PRACTICING PHYSICIANS

COMPILED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS  
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*Graduate Continuation Courses for Practicing Physicians—Jan 1, 1944–June 30, 1944*

Institution	Schedule of Course	Title of Course	Registration Fee and/or Tuition
<b>ANATOMY</b>			
New York Medical College, Flower and Fifth Avenue Hospitals, 11th Avenue at 105th Street, New York N Y	Arranged 60 hrs—Surgical	Applied Anatomy Upper Extremities including Shoulder, Girdle Axillae and Mannae	Surgical—\$115 Orthopedic— 90
	Arranged 40 hrs—Orthopedic	Applied Anatomy Lower Extremities	Surgical— 115 Orthopedic— 90
	Arranged 60 hrs—Surgical 40 hrs—Orthopedic	Thorax, including Axillae and Pectoral Region	260
	Arranged 160 hrs	Surgical Anatomy Head and Neck	275
New York Medical College at William Waldo Blackman Laboratory of Anatomy	Arranged 160 hrs—Fiber sex	Abdomen, including Pelvis and Pudendum	160 hrs 705 190 hrs 370
	190 hrs—Both sexes		
Columbia University New York Post Graduate Medical School 303 East 20th Street New York 3 N Y	Arranged 12 sessions	Surgical Anatomy as Applied to Thoracic Surgery (Cadaver)	175
	Arranged 6 sessions	Surgical Anatomy as Applied to Colon and Rectal Surgery (Cadaver)	10
	Arranged 12 sessions or more	Dissection and Surgical Anatomy	175
	Arranged 4 weeks	Surgical Anatomy as Applied to Operative Gynecology (Cadaver)	200
<b>ANESTHESIA</b>			
College of Medical Practitioners, Boyle and Michigan Avenue Los Angeles	March 26-April 24 Part time	Anesthesiology	10
Cook County Graduate School of Medicine, 427 South Honore Street, Chicago 12 Illinois	Arranged 1 week	Continuous Caudal Anesthesia for Obstetrics	
Harvard Medical School 25 Shattuck Street Boston Mass	Arranged Monthly	Clinical Anesthesia	30
Long Island College of Medicine Kings County Hospital 1313 Bedford Ave, Brooklyn, N Y	Spring 22 sessions	Regional anesthesia	75
Columbia University New York Post Graduate Medical School 303 East 20th Street, New York 3 N Y	2 weeks full time, throughout the year	Anesthesia	100
New York Polyclinic Medical School and Hospital 345 West 20th Street, New York 19 N Y	Arranged 12 sessions 3 months, full time Jan 2-April 1	Regional Anesthesia Regional and Spinal Anesthesia	75 300
Philadelphia Lying In Hospital 8th and Spruce Streets Philadelphia, Pa	1 week—offered weekly	Continuous Caudal Analgesia	Arranged
<b>BACTERIOLOGY</b>			
Columbia University New York Post Graduate Medical School 303 East 20th Street, New York 3 N Y	Arranged 1 month	Clinical Bacteriology and Serology	50
	1 month, Spring	Bacteriological Service in Medicine and Surgery	35
	Part time	Practical Technique of Medical Bacteriology	160
	1 month, Winter and Spring Full time		
<b>CARCINOMA</b>			
National Cancer Institute Bethesda, Md At various hospitals throughout the United States	Arranged	Diagnosis and Treatment of Cancer	None
Tufts College Medical School, 30 Bennet Street Boston, Mass	Arranged Through out the year	Cancer	Arranged
<b>INDUSTRIAL MEDICINE</b>			
Columbia University New York Post Graduate Medical School 303 East 20th Street, New York 3 N Y	April 10-14 Full time	Industrial Medicine	25
<b>MEDICINE</b>			
Allergy Tufts College Medical School, 30 Bennet Street, Boston, Mass	May 15-20	Allergy	25 20
Columbia University New York Post Graduate Medical School, 303 East 20th Street, New York 3, N Y	Jan 3 2 months Once weekly	Allergy	1.00
	March 13-31 3 weeks Full time	Allergy	
Vaughan Graham Clinic, 201 West Franklin Street, Richmond, Va	1 year Semiannually by arrangement	Training in Allergy	None
Arthritis Columbia University New York Post Graduate Medical School, 303 East 20th Street, New York 3, N Y	May 15 Full time Jan 3 2 months, once weekly	Arthritis and Allied Rheumatic Disorders Arthritis and Allied Rheumatic Disorders	25 35

## Graduate Continuation Courses for Practicing Physicians—Jan 1, 1944—June 30, 1944—Continued

	Institution	Schedule of Course	Title of Course	Registration Fee and/or Tuition
<b>Cardiology</b>				
	College of Medical Evangelists Boyle and Michigan Avenues Los Angeles Calif	Jan 12-March 30 12 hr period per week	Cardiology	\$ 24
	Tufts College Medical School 30 Bennet Street Boston, Mass	May 1-5	Cardiology	25
	Long Island College of Medicine 350 Henry Street Brooklyn N Y at Jewish Hospital	Spring 5 weeks part time	Electrocardiography and Clinical Cardiology	20
	Long Island College of Medicine 350 Henry Street Brooklyn N Y at Israel Zion Hospital	Spring 4 sessions once weekly	Clinical Cardiology	10
	Columbia University Faculty of Medicine 630 West 168th Street New York N Y at Mt Sinai Hospital	Feb 2-April 20 12 weeks Once a week	Advanced Course in Diseases of the Heart	50
		April 3-June 21 Part time	Comprehensive Course in Cardiovascular Diseases	60
	Columbia University Faculty of Medicine 630 West 168th Street New York N Y at Montefiore Hospital	Feb 17-May 25 Part time	Clinical Cardiology	50
	Columbia University New York Post Graduate Medical School 303 East 20th Street New York 3 N Y	April 17-21	Cardiology	35
	New York Medical College Flower and Fifth Avenue Hospitals 5th Avenue at 104th Street New York N Y	Arranged 30 hours	Cardiology	100
	University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories Philadelphia Pa	Arranged 30 days 30 hours	Electrocardiography and Cardiac Roentgenology	60
<b>Cystoscopy</b>				
	Cook County Graduate School of Medicine 427 South Honore Street Chicago 12 Illinois	Ten days Offered every 2 weeks	Practical Course	
<b>Diabetes</b>				
	Harvard Medical School 25 Shattuck Street Boston at New England Deaconess Hospital	Arranged Offered continuously	Diabetes	
	Tufts College Medical School 30 Bennet Street Boston Mass	Jan 17-23	Diabetes	25
	Columbia University New York Post Graduate Medical School 303 East 20th Street New York 3 N Y	May 15-19	Diabetes Mellitus Nephritis and Hypertension	35
	University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories Philadelphia Pa	Arranged 2-4 weeks, 75 hours	Diabetes Mellitus	150
<b>Dermatology and Syphilology</b>				
	Harvard Medical School 25 Shattuck Street Boston Mass at Massachusetts General Hospital	Arranged	Dermatology Elective Skin Ward Work	Arranged
		Arranged 2 months	Clinical Mycology	50
		Spring 1 month	Occupational Dermatoses	40
	Tufts College Medical School 30 Bennet Street Boston Mass	Arranged 1 year	Dermatology and Syphilology	300
		Jan 17-23	Dermatology	25
	New York City Department of Health 125 Worth Street New York N Y	May 15-20	Dermatology	25
		Arranged	Dermatology and Syphilology	
	Columbia University New York Post Graduate Medical School 303 East 20th Street New York 3 N Y	6 weeks or 3 months Part time throughout the year	Clinical Dermatology and Syphilology	0 wks 40 3 mos 75
		6 weeks or 3 months Part time throughout the year	Practical Instruction in the Diagnosis and Management of Syphilis	6 wks 40 3 mos 75
		6 weeks or 3 months Part time throughout the year	Diagnosis and Treatment of Syphilis	6 wks 25 3 mos 40
		6 weeks or 3 months Part time throughout the year	Practical Instruction in Physical Therapy as Applied to Diseases of the Skin	6 wks 40 3 mos 75
		3 months 6 months 1 year Part time throughout the year	Practical Instruction in the Pathological Histology of Diseases of the Skin	3 mos 75 6 mos 125 1 yr 175
		6 weeks or 3 months Part time throughout the year	Practical Instruction in Mycology and Animal Parasitology as Related to Diseases of the Skin	0 wks 40 3 mos 75
		6 weeks or 3 months Part time throughout the year	Practical Instruction in Minor Dermatological Surgery	6 wks 40 3 mos 75
		Feb 7-April 10	Exanthemata and Certain Contagious Diseases	25
		Jan 6-Feb 10 Part time	History of Dermatology	10
		May 8-13	Seminar in Practical Dermatology and Syphilology	35
		Feb 3-March 9 Part time	Industrial Dermatology	10
		New York Polytechnic Medical School and Hospital 345 West 50th Street New York 16 N Y	6 weeks or 3 months Part time	Dermatology and Syphilology Clinics
<b>Dietetics</b>				
	Tufts College Medical School 30 Bennet Street Boston Mass	Arranged Throughout the year	Dietetics	Arranged
<b>Electrocardiography</b>				
	Michael Reese Hospital, 29th and Ellis Avenue Chicago 10 Ill.	Feb 17-May 4 Part time	Electrocardiographic Interpretation	25
	Tufts College Medical School 30 Bennet Street Boston Mass	Jan 21-23	Advanced Electrocardiography	20
		May 8-12	Electrocardiography	25
	Columbia University Faculty of Medicine 630 West 168th Street New York N Y at Mt Sinai Hospital	Feb 4-April 15 Once a week	Advanced Course in Clinical Electrocardiography	35
	Columbia University New York Post Graduate Medical School 303 East 20th Street New York 3 N Y	May 22-24 Full time	Electrocardiography	50
	New York Medical College Flower and Fifth Avenue Hospitals 5th Avenue at 104th Street New York N Y	Arranged 15 hours	Electrocardiography	100

## Graduate Continuation Courses for Practicing Physicians—Jan 1, 1944–June 30, 1944—Continued

Institution	Schedule of Course	Title of Course	Registration Fee and/or Tuition
<b>Endocrinology</b>			
College of Medical Evangelists, Boyle and Michigan Avenues, Los Angeles, Calif	Jan 14 April 1 12 hr period per week	Endocrinology	\$ 24
Tufts College Medical School, 30 Bennet Street, Boston Mass	Spring 5 days	Endocrinology	25
Columbia University New York Post Graduate Medical School 33 East 20th Street, New York 3, N Y	Jan 3 2 months Spring	Diseases of the Thyroid and other Endocrine Glands and Nutrition	35
New York Medical College, Flower and Fifth Avenue Hospitals 5th Avenue at 105th Street, New York, N Y	Arranged 30 hours	Endocrinology	100
<b>Electroencephalography</b>			
University of Pennsylvania Graduate School of Medicine, 237 Medical Laboratories, Philadelphia, Pa	Arranged 6 Thurs days, 30 hours	Electroencephalography	150
<b>Gastroenterology</b>			
University of Chicago School of Medicine, 53th and Ellis Avenue, Chicago, Ill	2 weeks	Gastroscopy	100
Columbia University Faculty of Medicine, 630 West 163th Street, New York, N Y at Mt Sinai Hospital	April 3-June 21, Part time	Comprehensive course	60
Columbia University New York Post Graduate Medical School, 33 East 20th Street, New York 3, N Y	Jan 3 2 months once weekly	Gastroenterology	35
	Jun 6-March 29 12 sessions	Surgery of the Gastrointestinal Tract	160
	March 6-10 Full time	Gastroenterology	35
New York Medical College, Flower and Fifth Avenue Hospitals 5th Avenue at 105th Street, New York, N Y	Arranged 1 month	Gastroenterology	100
New York Polyclinic Medical School and Hospital, 315 West 50th Street, New York N Y	3 months, Winter, Spring	Clinical Gastroenterology	50
University of Pennsylvania Graduate School of Medicine, 237 Medical Laboratories Philadelphia Pa	16 weeks, 500 hours, Throughout the year	Clinical Gastroenterology	400
<b>Hematology</b>			
Columbia University Faculty of Medicine 630 West 163th Street, New York, N Y at Mt Sinai Hospital	March 20-May 11 Part time	Advanced Clinical Hematology	-
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 105th Street, New York, N Y	Arranged 30 hours	Physical Diagnosis and Hematology	100
<b>Hypertension and Nephritis</b>			
Long Island College of Medicine 1313 Bedford Avenue Brook lyn 2, N Y at Jewish Hospital	Spring 8 sessions, once weekly	Hypertension and Nephritis	10
<b>Infantile Paralysis</b>			
Georgia Warm Springs Foundation, Warm Springs, Ga	January and April One week	Poliomyelitis during Acute and Convalescent Periods	25
<b>Medicine, General</b>			
College of Medical Evangelists, Boyle and Michigan Avenues, Los Angeles, Calif	Winter 3 weeks, 6 lectures	Varicose Veins	12
Cook County Graduate School of Medicine, 427 South Honore Street, Chicago 12, Ill	To be announced in January	Medicine	
Tulane University School of Medicine, 1430 Tulane Avenue, New Orleans, La	March	Medicine	
Maine Medical Association (Address Dr F R Carter, South Portland)	Arranged	Home Study Course	
Tufts College Medical School, 30 Bennet Street Boston Mass	May 1-27 Full time	Internal Medicine	50
New York State Department of Health, 130 Worth Avenue, New York, N Y	2 months, Winter and Spring One lecture every fortnight	General Medicine	
Columbia University Faculty of Medicine, 630 West 163th Street, New York 3, N Y	April 24-28 Full time	Peripheral Vascular Diseases	35
Columbia University Faculty of Medicine 630 West 163th Street, New York, N Y at Mt Sinai Hospital	Jan 31 March 25 Part time	General Bedside Therapy	“
	May 8-12 Full time	Recent Developments in Diagnostic Procedure	35
	Jun 3 2 months, daily, full time	Seminar in Internal Medicine	200
	Jan 3 2 months, once weekly	Clinical Interpretations of Laboratory Data	25
	Jun 3 2 months, once weekly	Problems in Diagnosis	35
	Jan 3 2 months, once weekly	Diseases of the Liver and Biliary Tract	25
	Jan 3 2 months, once weekly	Diabetes Mellitus, Nephritis and Hypertension	25
	Jan 3 2 months, part time	Psychological Aspects of Internal Medicine	20
	Jan 3 2 months, once weekly	Peripheral Vascular Diseases	25
	Jun 12-23 5 days, 10 days	Symposium on Medicine	5 days 30 10 days 50
	June 6-9 Full time	Pathological Physiology Functional and Chemical Aspects	35 100
	Arranged, 1 month (Also 3 years course for degree)	Medicine	
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue and 105th Street, New York, N Y	Jan 1 March 31 April 1 June 30 Full time, 6 weeks or 3 months	Course for General Practitioners	6 wks 100 3 mos 150
New York Polyclinic Medical School and Hospital, 315 West 50th Street, New York 10, N Y			

## Graduate Continuation Courses for Practicing Physicians—Jan 1, 1944—June 30, 1944—Continued

Institution	Schedule of Course	Title of Course	Registration Fee and/or Tuition
<b>Medicine, General—Continued</b>			
Oklahoma State Medical Association 210 Plaza Court Oklahoma City	Arranged. 1 evening a week for 10 weeks	Internal Medicine	\$ 8
Philadelphia County Medical Society 301 South 21st Street Philadelphia Pa	Early in 1944 Annual Postgraduate Institute	Medicine	5
Marquette University School of Medicine Milwaukee Wis	Arranged. Throughout the year	Medical and Surgical Diagnosis	
<b>Preventive Medicine</b>			
Harvard Medical School, 25 Shattuck Street Boston Mass	{ Winter 4 months Winter, 4 months	Introduction to Epidemiology Advanced Epidemiology	Arranged Arranged
<b>Psychiatry and Neurology</b>			
College of Medical Evangelists, Boyle and Michigan Avenues Los Angeles, Calif	April 8-June 10	Medical Psychology	20
Catholic University of America Washington D C at Child Center	February-June	Clinical Psychiatry	150
Catholic University of America Washington D C at St Elizabeth's Hospital	Annually. Two semesters	Brain Pathology	300
Institute for Psychoanalysis, 43 East Ohio Street Chicago 10 Illinois	Jan. 4-March 21	Psychiatric Case Demonstrations	10
University of Chicago (University College) 18 South Michigan Ave., Chicago	Jan. 5-March 22	Personality Development in Childhood and Adolescence	30
Michael Reese Hospital 29th and Ellis Avenue Chicago Illinois	June, 5 days	The Rorschach Test in Milder Mental Disorders	35
The Menninger Clinic Topeka Kansas	1 year Daily	Psychoanalytic Instruction	Arranged
Topeka Institute for Psychoanalysis Topeka Kansas	{ Arranged 12 weeks part time Offered continuously	Short Courses Application of Psychoanalysis to the Study of Psychiatric Problems and of the Psychoses	\$10-\$100 a month
Harvard Medical School 25 Shattuck Street Boston, Mass	{ Arranged Arranged	Research in Neuropathology Elective Research on the Cerebrospinal Fluid Psychiatry General Course or Special Fields	Arranged Arranged
American Institute for Psychoanalysis, 240 Central Park South New York, N Y at New York Medical College	{ Jan 7-March 10 Weekly seminars Feb 3-April 20 12 weekly lectures Feb 1-April 4 10 weekly lectures Jan. 3-March 6 10 weekly seminars Jan. 6-April 13 15 weekly seminars Jan 4-March 7 10 weekly seminars March 20-May 22 10 weekly seminars	Continuous Case Seminar Integration of Personality in Psychoanalysis Psychoanalysis and Personnel Relationships Psychiatry and Psychoanalysis Readings in Freud Sex and Neurosis Technic of Dream Interpretation	12.50 13 10 15 20 12.50 12.50
Columbia University Faculty of Medicine 630 West 168th Street New York N Y	Arranged	Demonstrations in Neuropathology	
Columbia University New York Post-Graduate Medical School 303 East 29th Street New York 3 N Y	{ Jan-May 1 month or longer part time Feb 2-April 20 Part time Feb 2-May 17 10 sessions once weekly March 6-10 March 3-7	Clinical Neurology Psychoanalysis in General Medicine Review of Fundamentals of Neurology and Psychiatry Neurology and Psychiatry in Childhood Neurological Diagnosis and Treatment in General Practice	50 35 75 25 35
New York Medical College Flower and Fifth Avenue Hospitals Fifth Avenue at 105th Street New York N Y	Spring 10 hours	Seminar on Sex and Neuroses	20
University of Pennsylvania Graduate School of Medicine 237 Medical Laboratories Philadelphia Pa	{ Arranged. 8 weeks 240 hours Arranged. 10 weeks 250 hours	Clinical Psychiatry Clinicobiologic Neurology and Psychiatry	100 100
<b>Tuberculosis</b>			
California Tuberculosis Association 45 Second Street San Francisco Calif	{ Arranged. 1 week Arranged. 1 day to 1 week	Intensive Course Diseases of the Chest	None None
Mississippi State Sanatorium, Sanatorium Miss	Arranged. 2 weeks or more	Clinical Medicine and Chest Diseases	None
Columbia University New York Post-Graduate Medical School 303 East 29th Street New York N Y	Spring 2 months once a week part time	Acute and Chronic Diseases of the Chest	25
New York Medical College Flower and Fifth Avenue Hospitals 5th Avenue at 104th Street New York N Y	Arranged. 1 month	Clinical Pulmonary Diseases	100
State Tuberculosis Sanatorium Sanatorium Texas	14 days Through out the year	Diseases of the Chest	None
<b>Venereal Disease Control</b>			
United States Public Health Service Hot Springs National Park Arkansas	4 weeks Repeated at intervals	Management and Control of Venereal Diseases	None
New York City Department of Health 125 Worth Street New York N Y	Optional. Throughout the year	Diagnosis and Treatment of Venereal Diseases	None
Institute for the Control of Syphilis, University of Pennsylvania Hospital 3400 Spruce Street Philadelphia Pa.	{ Arranged. 6 sessions of 4 hours Arranged. 15 days Arranged. 10 days for Army medical officers	Basic Training Course in Venereal Disease Control Venereal Disease Control for Public Health Officers Intensive Training Course in Venereal Disease Control	20 None None



## COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Graduate Continuation Courses for Practicing Physicians—Jan 1, 1944—June 30, 1944—Continued

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Institution	Schedule of Course	Title of Course	Registration Fee and/or Tuition
<b>MILITARY MEDICINE</b>			
Bureau of Medicine and Surgery, Navy Department, Washington, D C	0 weeks—throughout year	Basic Instruction	None
	3 to 6 months—throughout year	X Ray	None
	8 weeks, periodically	Venereal Disease Control	None
	1 year, periodically	Urology	\$100
	3 weeks—throughout year	Tropical Medicine	None
	2 to 6 months—throughout year	Surgery—General Maxillofacial Neuro, Oral, Orthopedic, Plastic and Reconstructive, Thoracic Traumatic and Genitourinary Anesthesia	17.50
	6 months—throughout year	Aviation Medical Examiner	None
	8 weeks—throughout year	Blood Plasma	None
	3 to 4 weeks—throughout year	Chemical Warfare	None
	1 month—throughout the year	Deep Diving	None
	3 to 6 months—throughout year	Epidemiology and Laboratory Procedures	None
	6 months—throughout year	Flight Surgeon	None
	3 months—throughout year	General Medicine	None
	12 weeks—periodically	Industrial Hygiene	None
	3 to 6 months—throughout year	Internal Medicine	200
	2 to 4 months—throughout year	Malariaology	None
	6 months—throughout year	Naval Aviator	None
	9 months—throughout year	Obstetrics and Gynecology	None
	6 months—throughout year	Ophthalmology and Otolaryngology	None
	3 months—throughout year	Parachute Jumping	None
	1 to 3 months—throughout year	Pathology	None
	6 months—throughout year	Physical and Fever Therapy	None
	2 to 9 months—throughout year	Psychiatry	None
<b>OBSTETRICS AND GYNECOLOGY</b>			
Cook County Graduate School of Medicine, 127 South Honore Street, Chicago 1, Ill	Feb 21 2 weeks	Obstetrics	
University of Illinois College of Medicine, 1833 West Polk Street, Chicago, Ill	Feb 7 2 weeks	Gynecology	
	Arranged 2 weeks	Obstetrics and Pediatrics	
Chicago Maternity Center, 1336 Newberry Avenue, Chicago, Ill	January and May 4 months	Practical Obstetrics	10
Louisiana State University School of Medicine 1512 Tulane Avenue New Orleans, La	Spring 2 weeks full time	Obstetrics	None
Tulane University of Louisiana School of Medicine 1150 Tulane Avenue, New Orleans, La	Arranged April	Obstetrics and Gynecology	
Maline Medical Association (Address Dr F R Carter South Portland)	Arranged	Home Study Course	None
Harvard Medical School, 25 Shattuck Street, Boston, Mass	Monthly 10 exercises	Gonorrhea in Women	20
	1 month or more	Clinical Obstetrics	
	June 1 month or more	Gynecology	125
Columbia University Faculty of Medicine, 630 West 168th Street, New York 32, N Y at Margaret Hague Maternity Hospital	1 month Monthly	Obstetrics, Observation Course	160
	Arranged 10 or 15 sessions part time throughout the year	Diagnosis and Office Treatment	10 sessions 40 15 sessions 60
Columbia University New York Post Graduate Medical School, 303 East 20th Street New York 3, N Y	Arranged 15 sessions, part time, throughout the year	Cystoscopy and Endoscopy	75
	April 10-15, June 5-10 Full time	Symposium on Recent Advances in Gynecology	50
	Arranged 8 weeks, part time, 24 sessions	Gynecological Endocrinology	100
	Arranged Part time Jan 3, April 3	Gynecological Pathology	Arranged
	1, 2 or 3 months, full time	Seminar in Gynecology	1 mo 15 2 mos 25 3 mos 40
	Arranged 160 hours	Applied Anatomy of Pelvis and Abdomen	205
New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 105th Street, New York, N Y	Spring 2 months, full time	Obstetrics and Gynecology	2.0
<b>PATHOLOGY</b>			
Harvard Medical School, 25 Shattuck Street, Boston, Mass	1 month Monthly and weekly, January through May	Pathology of Obstetrics and Gynecology	1 mo 125
Columbia University Faculty of Medicine, 630 West 168th Street, New York 32, N Y at Mt Sinai Hospital	Feb 1 April 12 Part time	General and Special Pathology	45
	April 10-June 24 Part time	Surgical Pathology	45
Columbia University New York Post Graduate Medical School, 303 East 20th Street, New York 3, N Y	Jan 18-April 27 2 sessions weekly	Surgical Pathology	125
	April 12 May 20 Part time	Gross and Microscopic Pathology	50
	March 1 27 Part time	Pathology of the Blood and Blood Forming Organs	75

## Graduate Continuation Courses for Practicing Physicians—Jan 1, 1944–June 30, 1944—Continued

Institution	Schedule of Course	Title of Course	Registration Fee and/or Tuition
<b>Pathology—Continued</b>			
New York Eye and Ear Infirmary 218 Second Avenue New York N Y	January March 3 months	Histopathology of the Eye	\$85
New York Polyclinic Medical School and Hospital 345 West 50th Street New York 19 N Y	Arranged	Pathology and Bacteriology	Arranged
<b>PEDIATRICS</b>			
University of Illinois College of Medicine 1853 West Polk Street Chicago, Ill	Arranged. 2 weeks	Obstetrics and Pediatrics	None
Tulane University of Louisiana School of Medicine 1430 Tulane Avenue New Orleans	Jan 24 27 May	Pediatrics	
Malaw Medical Association (Address Dr F R. Carter South Portland)	Arranged	Home Study Course	None
Tufts College Medical School 30 Bennet Street Boston Mass	Jan 3-29	Pediatrics	50
Long Island College of Medicine 350 Henry Street Brooklyn N Y at Beth El Hospital	Spring 10 sessions twice weekly	Diseases of Children	10
Long Island College of Medicine 350 Henry Street Brooklyn N Y at Long Island College Hospital	Spring 8 sessions once weekly	Endocrine Diseases in Children	10
Columbia University New York Post Graduate Medical School 303 East 90th Street New York 3 N Y	March 13-18 Full time	Symposium on Recent Advances in Pediatrics	35
New York Polyclinic Medical School and Hospital 345 West 50th Street New York 19 N Y	Arranged 4 weeks part time	Pediatrics	50
<b>PHYSICAL THERAPY</b>			
Northwestern University Medical School 303 East Chicago Avenue Chicago Ill	12 weeks for Latin American students 1 to 3 month courses arranged for Army Navy and Civilian Physicians	Physiotherapy	Civilians 200 Others None
Columbia University New York Post Graduate Medical School 303 East 90th Street New York 3 N Y	March 20-24 Full time	Physical Therapy	35
New York Polyclinic Medical School and Hospital 345 West 50th Street New York 19 N Y	Winter Spring 4 weeks part time	Physical Therapy	100
<b>PUBLIC HEALTH</b>			
Albany Medical College 47 New Scotland Avenue Albany N Y	Arranged 1 year	Extension Course in Public Health Qualifying for Grade II Health Officer	30
State of New York Department of Health Albany N Y	6 months field training in school of public health offered continuously	Public Health	
<b>RADIOLOGY</b>			
Cook County Graduate School of Medicine 427 South Honore Street Chicago 19 Ill	Weekly	Courses in X Ray Interpretation Fluor oscopy and Deep X Ray Therapy	
Harvard Medical School 25 Shattuck Street Boston Mass	One month Monthly	General Roentgenology (3 courses offered at various hospitals)	50
	One month Monthly	Roentgenology in Diseases of the Eye Ear and Accessory Sinuses	100 35
Tufts College Medical School 30 Bennet Street Boston Mass	Jan 10-13	Radiology	25
Long Island College of Medicine 350 Henry Street Brooklyn N Y	Spring 8 sessions once weekly	Cardiovascular Roentgenology	10
Columbia University Faculty of Medicine 630 West 168th Street New York 32 N Y at Montefiore Hospital	Jan 11 Feb 29 March 13-May 1 part time	Roentgenology of the Gastro-Intestinal Tract	35
Columbia University Faculty of Medicine 630 West 168th Street New York 32 N Y at Presbyterian Hospital	Jan 12 Sixteen one hour lectures	Radiological Physics	Practicing physicians 50 Hospital residents 10
New York Eye and Ear Infirmary 218 Second Avenue New York N Y	Arranged 6 weeks monthly	Ophthalmic and Otologic Roentgenology	40
New York Medical College Flower and Fifth Avenue Hospitals 5th Avenue at 10th Street New York N Y	Arranged 2 months	Radiology	150
New York Polyclinic Medical School and Hospital 345 West 50th Street New York 19 N Y	6 weeks or 3 months offered monthly 6 weeks or 3 months Monthly	Practical Roentgenological Interpretation and Technique Diagnostic Roentgenology and Radiotherapy	6 wks 150 3 mos 300 6 wks 150 3 mos 300
<b>SURGERY</b>			
<b>Fractures</b>			
Long Island College of Medicine 350 Henry Street Brooklyn N Y	Spring 10 sessions once weekly	Fractures	10
Cook County Graduate School of Medicine 427 South Honore Street Chicago 19 Ill	To be announced in January	Fractures	
<b>Gastroscopy</b>			
Columbia University Faculty of Medicine 630 West 168th Street New York 32 N Y at Presbyterian Hospital	Arranged. 2 months	Gastroscopy	200
Columbia University New York Post-Graduate Medical School 303 East 90th Street New York 3 N Y	Arranged. Spring	Gastroscopy	75
New York Medical College Flower and Fifth Avenue Hospitals 5th Avenue at 10th Street New York N Y	Arranged 10 sessions (or more)	Gastroscopy	100
<b>Ophthalmology</b>			
Children's Memorial Hospital 707 Fullerton Avenue Chicago 14 Ill	Winter Spring 6 days	Neuro-Muscular Anomalies of the Eyes from Neurologic Viewpoint	50
Cook County Graduate School of Medicine 427 South Honore Street Chicago 19 Ill	Arranged	Clinical Course	
University of Illinois College of Medicine 1853 West Polk Street Chicago Ill	Winter Spring 9 months part time	Ophthalmology	150
Tufts College Medical School 30 Bennet Street Boston Mass	Arranged. 3 mornings a week for 1 month	Ophthalmology	50
Long Island College of Medicine 350 Henry Street Brooklyn N Y	Spring 6 sessions daily	Basic and Clinical Ophthalmology	20

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL*, Dec. 11, page 991

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Jan. 17-19 *Part III* Various centers, January Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia

#### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY *Oral Part II* Chicago June 12-16 Final date for filing application is March 12 Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY *Written*, Various large cities, May 8 *Oral* Chicago June 9-10 Final date for filing application is April 1 Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Part II* May or June Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6, Pa.

AMERICAN BOARD OF OPHTHALMOLOGY Chicago, October Sec., Dr. John Green, 6550 Wabasha Ave., St. Louis

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Written and Oral Part II* Chicago Jan. 21-22 Sec., Dr. Guy A. Caldwell, 3503 Prylana St., New Orleans La.

AMERICAN BOARD OF OTOLARYNGOLOGY *Oral* Los Angeles Feb. 2-5 Sec., Dr. Dean M. Lister, University Hospitals, Iowa City, Ia.

AMERICAN BOARD OF PEDIATRICS *Written* Locally, Feb. 4 *Oral* Philadelphia March 25-26 and San Francisco May 6-7 Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *Oral* Locally, Dec. 20-21 Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington D. C.

AMERICAN BOARD OF SURGERY *Written Part I* March 10 Final date for filing application is Jan. 1 Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia

AMERICAN BOARD OF UROLOGY *Oral* Chicago Feb. 15-17 Sec., Dr. Gilbert J. Thomas, 1409 Willow St., Minneapolis

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Federal Income Taxes Fees for Attorneys' Services Which Temporarily Enabled Continuance of Illegal Practice an "Ordinary and Necessary Expense of Carrying on Trade or Business"**—Heminger practiced dentistry in absentia by mail. Apparently without seeing his so-called patients he undertook to make and supply false teeth. The post office department found in appropriate proceedings that his methods were fraudulent and an order denying him the use of the mails was issued. Subsequently he sued the postmaster general in the district court for the District of Columbia, which enjoined the postmaster from enforcing the fraud order. On appeal the circuit court of appeals for the District of Columbia reversed the judgment of the district court and the fraud order of the post office department was sustained. In the defense of his business in the proceedings before the post office department and in the district and appellate courts Heminger incurred and paid several thousand dollars for attorneys' fees and expenses. The net effect of the services rendered by the attorneys was to prevent the enforcement of the fraud order during 1937 and 1938, during which years Heminger continued in business and received large gross incomes. In computing his federal income tax Heminger sought to deduct from his gross income for 1937 and for 1938, as an ordinary and necessary expense of

carrying on that business, the attorneys' fees and expenses of the literature.

In this respect the internal revenue code, section 23, provides, in part, as follows:

"In computing net income there shall be allowed as deductions

"(a) Expenses

"(1) In general

"All the ordinary and necessary expenses paid or incurred during the taxable year in carrying on any trade or business."

The commissioner of internal revenue disallowed the deduction, and the board of tax appeals affirmed the determination of the commissioner. Heminger then appealed to the circuit court of appeals, seventh circuit.

The question is, said the circuit court of appeals, whether or not such expenses are deductible as ordinary and necessary expenses in carrying on Heminger's business within the meaning of the section quoted in the footnote. What is an ordinary expense is discussed by Mr. Justice Cardozo in *Welch v. Helwing*, 290 U. S. 111, 54 S. Ct. 8, 78 L. Ed. 212, as follows:

Ordinary in this context does not mean that the payments must be habitual or normal in the sense that the same taxpayer will have to make them often. A lawsuit affecting the safety of a business may happen once in a lifetime. The counsel fees may be so heavy that repetition is unlikely. None the less, the expense is an ordinary one because we know from experience that payments for such a purpose, whether the amount is large or small, are the common and accepted means of defense against attack.

By this standard, we think it plain that the expense in this case was ordinary. It was such an expense as related strictly to the life of the business. Not only, however, the court continued, must the expense be ordinary, it must also be necessary. In *Kornhauser v. United States*, 276 U. S. 145, 48 S. Ct. 219, 72 L. Ed. 505, Mr. Justice Sutherland, in discussing the allowance, as a deduction, of attorneys' fees as a business expense, said:

where a suit or action against a taxpayer is directly connected with or, as otherwise stated, proximately resulted from, his business the expense incurred is a business expense within the meaning of the act.

We think that where an expense is incurred which saves the life of a business, even for a time, it is, in the light of the foregoing interpretation, not only a business expense but a necessary business expense. Without the expenditure there would have been no income in this case because there would have been no business. The business depended on the expense incurred in the litigation. Obviously, therefore, the expense was both ordinary and necessary. If the expense in this case was not an ordinary and necessary expense to the "carrying on" of the business, we are unable to understand the English language. Without this expense there would have been no business. Without the business there would have been no income. Without the income there would have been no tax. To say that this expense is not ordinary and necessary is to say that that which gives life is not ordinary and necessary.

The judgment of the board of tax appeals affirming the commissioner's determination was accordingly reversed and the expenses of the attorneys' fees was allowed to be deducted from the gross income of Heminger during the two years in question.—*Heminger v. Commissioner of Internal Revenue*, 133 F. (2d) 567 (1943).

## Society Proceedings

### COMING MEETINGS

Annual Forum on Allergy, St. Louis Jan. 22-23 Dr. Jonathan Forman  
394 East Town St., Columbus, Ohio  
Society of Surgeons of New Jersey, Atlantic City January 29 Dr.  
Walter B. Mount, 21 Plymouth St., Montclair, N. J., Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below

#### American J Digestive Diseases, Fort Wayne, Ind

10 319-364 (Sept.) 1943

- \*Chronic Peptic Ulceration of Esophagus E E Cleaver—p 319  
Leiomyosarcoma of Stomach Presenting 4 Cases, A Bassler—p 342  
Proteus Vulgaris and Proteus Morganii in Diarrheal Disease of Infants.  
E R Netter and R H Farrar—p 344  
Colloidal Gold Reaction of Blood Serum in Hepatic and Other Diseases  
P H Noth and E R Loew—p 348  
Primary Constipation Treatment D C Ditmore—p 356

**Chronic Peptic Ulceration of Esophagus**—Cleaver reports 10 cases of peptic ulcer of the esophagus that were observed at the Toronto General Hospital. Five of the patients were men and 5 were women. Their ages varied between 30 and 79. The condition is not rare. It presents a definite clinical picture and positive roentgenologic aspects. It is nearly always associated with a congenitally short esophagus and a diaphragmatic hernia which permits regurgitation of the acid contents of the stomach into the esophagus. In 1 case the acid secretion of ectopic gastric mucosa was the probable cause in the development of esophageal ulcer. Peptic ulcer of the esophagus responds to adequate treatment. When roentgenoscopy fails to show a diaphragmatic hernia and a short esophagus but biopsy shows an ectopic gastric mucosa, the treatment of the ulcer is the same as for gastric and duodenal ulcer, but when roentgenoscopy reveals a diaphragmatic hernia and a short esophagus the esophageal ulcer will be in contact with the acid contents of the stomach at certain times. Fluids and semisolids should be taken at two or three hour intervals. Hot or cold fluids should be avoided. Solids generally cause discomfort and pain. The patient is more comfortable in the sitting posture. Tincture of belladonna should be given fifteen to twenty minutes before each feeding. A tablespoon of liquid petrolatum should be taken before each meal. Feeding by duodenal tube is very satisfactory. Six or seven feedings of milk, orange juice, liver extract, corn syrup and ascorbic acid should be given in twenty-four hours. Dilatation of the esophagus must be resorted to if the patient presents difficulty in swallowing after three weeks of duodenal feeding.

#### American Journal of Diseases of Children, Chicago

66 349-470 (Oct.) 1943

- Long Term Prevention of Tooth Decay Among Diabetic Children J D Boyd—p 349  
Ingestion of Fluoride and Dental Caries Quantitative Relations Based on Food and Water Requirements of Children One to Twelve Years Old F J McClure—p 362  
Pancreatic Function and Disease in Early Life II Effect of Secretion on Pancreatic Function of Infants and Children Charlotte L Maddock S Farber and H Shwachman—p 370  
Effects of Disease on Nutrition I Absorption Storage and Utilization of Vitamin A in Presence of Disease S Spector C F McKhann and Emily R Meserve—p 376  
Effect of Adolescence on Basal Metabolism of Normal Children R C Lewis Anna Marie Duval and A Iliff—p 396  
Pancreatic Function and Disease in Early Life III Methods of Analyzing Pancreatic Enzyme Activity H Shwachman S Farber and Charlotte L Maddock—p 418

**Ingestion of Fluoride and Dental Caries**—McClure calls attention to the recent discovery of the inhibitory effect of trace quantities of fluorine in drinking water on dental caries in children and young adults. The addition of fluorine to children's diets during the first seven or eight years of life offers great promise of reducing the prevalence of dental caries. One part per million concentration of fluorine in drinking water is regarded as a permissible level. An estimated quantity of water borne fluorine equal to approximately 0.5 to 1 mg of fluorine

daily present in the average diet from the first to the eighth year of life appears to be instrumental in reducing dental caries to a great degree. This small quantity of additional fluorine ingested during the comparatively few years of formative tooth life presents no health hazard. In certain communities the drinking water may contain fluorine naturally in a quantity equal to 1 part of fluorine per million. In these places a supplement of dietary fluorine would be undesirable. There is under consideration also the advisability of a direct fluorination of drinking water so as to provide an optimum quantity of fluorine for improved dental health. Only in communities in which the water supplies are either fluorine free or contain suboptimal amounts need serious consideration be given to the possible use of a supplement of fluorine in children's diets. Calculations of the quantity of supplemental fluorine required must take into account fluorine present naturally in the local water supply.

#### American Journal of Medical Sciences, Philadelphia

206 421-560 (Oct.) 1943

- Intradermal Test for Susceptibility to and Immunization Against Whooping Cough Using Agglutininogen from Phase I Haemophilus Pertussis E W Flosdorf Harriet M Felton A Bondi and A C McGuinness—p 421  
\*Thyrototoxicosis as Sole Cause of Heart Failure W B Likoff and S A Levine—p 425  
Control of Polycythemia Vera by Venesection L E Hines and W C Darnall—p 434  
Objective Methods to Determine Speed of Blood Flow and Their Results (Fluorescein and Acetylene) K Lange and L J Boyd—p 438  
Congenital Heart Block Study of 2 Cases in Healthy Adults T C Jaleski and E T Morrison—p 449  
Syphilitic Aneurysm of Celiac Artery T C Lauppi—p 453  
Localized Agnathogenesis (of Unknown Origin) Xanthomatosis of Spleen with Splenomegaly and Anemia M L Dreyfuss and Ella H Fishberg—p 458  
\*Clinical Observations on Effect of 3,3-Methylene-Bis(4-Hydroxycoumarin) L R Wasserman and D Stats—p 466  
Hematuria with Hematuric Neuritis Report of Case L A Golden—p 474  
\*Carbon Dioxide by Inhalation as Expectorant A L Banyai and A V Cadden—p 479  
Mazzini Slide Flocculation Test Sensitivity of Its Antigen M Oosting and Virginia Watson—p 486  
Further Experience with Furfuryl Trimethyl Ammonium Iodide (Furmethide) in Treatment of Urinary Retention Due to Bladder Atony S H Beaser J H Lipton and M D Altshuler—p 490  
Rapid Removal of Excess Joint Fluid by Acid Salts Experiments with Traumatic Hydrarthrosis of Knee Joint L Pelner—p 498  
Effect of Ergotamine Tartrate and Neosynephrin HCL on Work Capacity of Human Muscle G C Kotalik G L Maison and C Pfeiffer—p 503  
Cardiac Arrest by Action of Potassium C A Fineh and J F Marchand—p 507

**Thyrototoxicosis as Sole Cause of Heart Failure**—Likoff and Levine analyzed all cases of thyrototoxicosis in which a subtotal thyroidectomy was performed at the Peter Bent Brigham Hospital between 1923 and 1941 inclusive. Among 409 cases there were 78 cases of thyrototoxicosis with some additional form of organic heart disease. In the 'noncardiac' group (331 cases) there were 8 with severe and 13 with moderate heart failure (63 per cent). These 21 cases offer evidence that thyrototoxicosis alone may cause heart failure even when the blood pressure, the coronary arteries and the valves are normal. None of these patients showed evidence of organic heart disease after an average period of five years (the longest was ten years). There were 4 deaths during this period, all from carcinoma. All the other patients were essentially well. The congestive failure was more likely to occur in the female sex, with increasing age, when the thyrotoxic state lasted longer, and when auricular fibrillation was present. No satisfactory explanation was found for the heart failure. It is suggested that vitamin B deficiency may play a contributory part. The similarity between symptoms and physical findings in mitral stenosis and thyrototoxicosis may lead to errors in diagnosis for even left auricular dilatation is found in the latter condition on x-ray examination. Masked thyrototoxicosis is being overlooked as a cause of heart failure, an error which is costly because the condition is curable.

**Effect of Dicumarol**—Wasserman and Stats demonstrated in laboratory animals a prolongation of the clotting time and a reduction in prothrombin activity of the blood from administration of dicumarol. Large or repeated toxic doses produced

widespread hemorrhage and in some animals death. The drug administered orally to 71 adult patients in repeated doses produced a definite fall (after a twenty-four to seventy-two hour latent period) in the prothrombin content and a prolongation of the coagulation time of the blood in most instances. There is a great variability in the degree of response to this drug. A definite fixed dosage schedule cannot be made. Because of the variable response and latent period the drug has not always been useful in the therapy of arterial thrombosis or embolism, arteriotomy or major pulmonary embolism. Because of the danger of hemorrhage, the drug has not proved useful during or shortly after operative procedures or for patients with lesions from which bleeding might occur. Transfusions of fresh blood do not arrest the hemorrhagic tendency due to dicumarol. Several instances have been observed in which embolism, thrombosis or progression of existing venous thrombosis have occurred despite a low blood prothrombin induced by dicumarol. Symptomatic improvement in the 10 cases of occlusive peripheral vascular disease was not observed during a three month period while the prothrombin remained depressed as a result of dicumarol administration. It is possible that dicumarol affects blood coagulation not only by lowering the prothrombin content but through other mechanisms. Further trial is required before the effects of this drug in peripheral venous thrombosis and in pulmonary infarction can be determined. Dicumarol should not be administered if the prothrombin index is less than 50 per cent.

**Carbon Dioxide by Inhalation as Expectorant**—Banyai and Cadden studied the clinical use of carbon dioxide inhalations in tuberculous patients. A mixture of 10 per cent carbon dioxide and 90 per cent oxygen administered by the closed method through a mask, or by the open method through a glass tube, is well tolerated. The relief obtained is noticed subjectively and objectively. Spells of strenuous, exhausting coughing are prevented and thereby rest is secured for the patient and particularly for the lungs, an unproductive cough is transformed into a useful one, directly after inhalation the expectorated sputum is increased and its character changes from a heavy, thick and tenacious type into a thinner, more watery kind, the use of expectorant drugs and narcotics can be reduced. The effectiveness of carbon dioxide is attributable to the facts that (1) it is a powerful respiratory stimulant and it induces increased inspiratory movements of the thorax, which in turn cause a stretching and dilatation of the bronchial tubes, (2) it stimulates the myoelectric structures of the lung and leads to a forceful peristaltic movement of the bronchi, (3) it liquefies mucopurulent inflammatory exudate that stagnates in the bronchial tract. The treatment is indicated whenever there is an accumulation and retention of inflammatory exudate in the bronchial tract and its evacuation—in spite of strenuous cough—is inadequate. The treatment should not be given to patients who have had recent pulmonary hemorrhage, to those with severe emphysema, when extensive pulmonary fibrosis is present without atelectasis, bronchiectasis or mucopurulent retention in the air passages, to patients with acute plastic pleurisy and pleurisy with effusion, to hypertensive patients, and when the cause of cough is outside the lungs.

## Archives of Neurology and Psychiatry, Chicago

50 381-498 (Oct.) 1943

- Conduction of Cortical Impulses and Motor Management of Convulsive Seizures. P. F. A. Hofer and J. L. Pool—p. 381  
Effects of Morphine on Learned Adaptive Responses and Experimental Neuroses in Cats. A. Wikler and J. H. Masserman—p. 401  
Growth Asymmetry Due to Lesions of Postcentral Cerebral Cortex. W. Penfield and J. S. M. Robertson—p. 405  
Prognosis of Multiple Sclerosis. H. D. McIntyre and A. P. McIntyre—p. 431  
Mucular Lesion in Psychiatric Patients. Pressure Measurements on Handwriting as Indicator. J. Ruesch and J. E. Finesinger—p. 439  
Prevention of Hemorrhages in Brain in Experimental Electric Shock. G. Heilbrunn—p. 450  
Localized Sweating as Part of Localized Convulsive Seizure. P. C. Bucy and K. H. Pribram—p. 456  
Syndromes of Pontile Tegmentum. Foville's Syndrome, Report of 3 Cases. W. Freeman, H. H. Ammerman and M. Stanley—p. 462  
The Seattle Butt Afloat Study in Group Psychology. A. J. Ross—p. 472

## North Carolina Medical Journal, Winston-Salem

4 421-456 (Oct.) 1943

- Primary Atypical Pneumonia, Etiology Unknown. W. R. Berryhill, E. McG. Hedgpeth, W. G. Morgan, R. E. Stone and Ruby A. Smith—p. 421  
Local Use of Sulfadiazine, Tyrothricin, Penicillin and Radon in Otolaryngology. S. J. Crowe and A. T. Ward—p. 431  
Some Epidemiologic Aspects of Poliomyelitis, with Report of 15 Cases. L. D. Hagaman—p. 435  
Method of Intravenous Iodine Medication for Rapid Preparation of Patients with Diffuse Toxic Gout for Operation. A. G. Brenizer—p. 439

## Public Health Reports, Washington, D. C.

58 1429-1456 (Sept. 24) 1943

- Experimental Chemotherapy of Burns and Shock. IV. Production of Traumatic Shock in Mice. V. Therapy with Mouse Serum and Sodium Salts. S. M. Rosenthal—p. 1429  
Notes on Pathology of Experimental Trinitrotoluene Poisoning. R. D. Lillie—p. 1436

58 1457-1496 (Oct. 1) 1943

- Tuberculosis Mortality in United States, 1939-1941. J. Yerushalmy, H. E. Hilleboe and C. E. Palmer—p. 1457

## Surgery, St. Louis

14 487-644 (Oct.) 1943

- Consideration of Present Status of Shock Problem. "Problems on Shocks." A. Blalock—p. 487  
Effect of Infusions of Bovine Serum Albumin in Experimental Shock. J. E. Dunphy and J. G. Gibson, II—p. 509  
Venous Pressures in Patients with Varicose Veins. H. S. Mayerson, C. H. Long and E. J. Giles—p. 519  
Study of Healing of Abdominal Operative Wounds Following Closure of Perforated Ulcers of Stomach and Duodenum. R. H. Meade Jr.—p. 526  
Sulfathiazole in Chronic Osteomyelitis. J. W. Toumey—p. 531  
Solitary Eccentric (Cortical) Abscess in Bone. R. C. Brown and R. K. Ghormley—p. 541  
Fascia Lata Regeneration. Preliminary Report. J. C. Foshee—p. 554  
Sulfathiazole Toxic Nephrosis and Kidney Decapsulation. C. A. Wattenberg and R. C. Coleman Jr.—p. 570  
Abdominal Puncture as Diagnostic Aid. C. M. Henry and C. F. Vale—p. 574  
Influence of Duodenal Contents on Intragastric Acidity. Experimental Study. A. Kesavain and F. C. Mann—p. 578  
Destructive Angiocystic Disease of Pancreas. W. W. Babcock, M. E. Sano and S. B. Gibson—p. 583  
Association of Carcinoma in Body and Tail of Pancreas with Multiple Venous Thrombi. W. E. Kenney—p. 600  
Ligation of Superior Mesenteric Vein. E. Schnug—p. 610  
Treatment of Acute Empyema by Continuous Tidal Irrigation. E. J. Poth and Mary E. Mathes—p. 617  
Perforation of Cervical Esophagus with Mediastinitis. K. D. Grace and T. M. Irwin—p. 631  
Simplified Suture Testing Apparatus. C. Dennis—p. 640

**Sulfathiazole in Chronic Osteomyelitis**—Toumey reports 13 cases of osteomyelitis in which chemotherapy was employed at the Lahey Clinic. Healing took place promptly in 10 of the 13 cases, while in 2 chemotherapy could not be used because of reaction to the drug. According to the recommended treatment, a course of chemotherapy and bed rest in the hospital is employed for one week before operation, 90 grams (6 Gm.) of sulfathiazole is given in twenty-four hours. The operative procedure consists in saucerization, local application of from 2 to 15 Gm. of sulfathiazole in the wound, according to the size of the wound, primary closure without drainage, all wound levels being dusted with sulfathiazole, and plaster immobilization including the joint above and below the site of the lesion. Postoperative chemotherapy consists in oral administration of sulfathiazole for a period of at least two weeks. In saucerization was done. Five healed promptly and two of these refractory cases showed sensitivity to sulfathiazole. 5 other cases saucerization was not done because of draining sinuses without gross evidence of bone infection. These healed promptly with primary closure.

**Continuous Tidal Irrigation in Acute Empyema**—According to Poth and Mathes the aim of the treatment of acute empyema is twofold: preservation of life and prevention of the development of a chronic disease. This aim is achieved by the proper application of any procedure which provides early, free and efficient drainage to the cavity, prevents paradoxical respiratory movements of the mediastinal structures, allows the lung to reexpand to fill the cavity and obliterates the dead space. The authors present a scheme for tidal irrigation. So-called unresolved pneumonia is usually unrecognized.



ema X-ray examinations should be made. The presence of a seoliosis following pneumonia with the concavity toward the affected side is highly suggestive of empyema. The positive diagnosis must rest on the aspiration of pus. At the time of making a diagnostic puncture one should be prepared to remove as much pus as possible. Pus under pressure should not be left in contact with a puncture wound. The combined aspiration of pus and injection of air serve several functions: (1) It relieves pressure, (2) it decreases the surface area bathed by pus and so reduces toxic absorption, (3) it reduces the required frequency of aspiration in the event that thoracotomy is delayed, because the slowly absorbed air compensates for the reaccumulation of pus, (4) it keeps the cavity partly distended and lessens the likelihood of early pocket formation, (5) it permits accurate x-ray visualization of the extent and nature of the cavity and (6) it occasionally results in a cure of the empyema. When the decision has been made that drainage is necessary, when the pus has become thick and fibrinous and when it has not been possible to demonstrate the presence of acid fast organisms, simple tube thoracotomy is done. A location anterior to the posterior axillary line between the fifth and eighth ribs is the site of choice for tube thoracotomy. Fifty-five consecutive cases of postpneumonic empyema were treated during a period of six years. Two year follow up studies have been obtained in 54 of the cases. There have been no recurrences and in no instances has a chronic empyema developed. Two deaths occurred in infants aged 9 and 18 months respectively.

### Texas State Journal of Medicine, Fort Worth

39 275-322 (Sept.) 1943

- Classification of Bone Tumors G T Caldwell—p 282  
X-ray Treatment of Bone Tumors C L Martin—p 285  
Diagnosis in Primary Bone Tumors W B Carrell—p 289  
Indications for Surgery in Bone Tumors B L Coley—p 290  
Management of Cardiac Arrhythmias A W Harris—p 293  
Treatment of Osteomyelitis G W N Eggers and M D Knight—p 297  
\*Leber's Disease Report of 4 Cases in One Family C S Alexander—p 301  
The Doctor and the Postwar World W B Russ—p 303  
Suggested Procedures for Control of Typhus Fever G W Cox—p 305

**Leber's Disease in Family**—Leber's disease is defined as a hereditary bilateral primary optic atrophy. It is transmitted by heredity, almost entirely by the female, who is usually unaffected, although it may rarely be transmitted by the male directly or indirectly through the daughters. It may be seen in successive generations, it usually skips one or more generations. The disease frequently affects more than one person in a family, and males more frequently than females. Literature records one postmortem microscopic examination of the optic nerve made by Rehsteiner in 1932. This author found atrophy of the ganglion cells and nerve fiber layer of the retina and atrophy of the optic nerve limited to the papillomacular bundle with other parts of the nerve normal. The medullary sheaths were almost all destroyed. There was an increase in the glia and atrophy of the finer connective tissue partitions of the nerve. Alexander observed 4 cases of Leber's disease in a family of 5 children. The incidence between the sexes was equal. In the 2 girls the onset of the disease was at 5 years of age whereas usually first symptoms occur at puberty. One patient presented an associated nystagmus, this is unusual in cases of greatly reduced vision. No other record of its concurrence with Leber's disease could be found. In 2 patients the onset of the disease was at about the fifth year and no improvement was noted. The onset of the disease is usually between puberty and 30 years of age. The chief symptom is great diminution in vision with central scotoma. Complete blindness does not occur. Prognosis is poor, but improvement sometimes occurs. Treatment is of no benefit.

### Wisconsin Medical Journal, Madison

42 1005-1112 (Oct.) 1943

- Pattern R. M. Kurten—p 1025  
Erythroblastosis Fetalis and Its Relationship to Transfusion Reactions and Accidents T A Leonard—p 1034  
Management of Toxemia in Last Trimester of Pregnancy W S Bump—p 1037  
Heart Disease and Pregnancy J Jensen—p 1043  
Resuscitation of Newborn Infant W C Keittel—p 1047  
Treatment of Burns A A Schaefer—p 1052

### FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Journal of Radiology, London

16 287-322 (Oct.) 1943

- \*Occupational Disease of Lungs in Boiler Scalers L Dunner—p 287  
Isodose Surfaces W V Mayneord—p 291  
Classification of Laryngeal Cancer from Radiotherapeutic Viewpoint M Lederman—p 298  
Technic of Radium Treatment of Intrinsic Cancer of Larynx M Lederman and W V Mayneord—p 301  
Radiologic Appearances in Development of Coal Miners' Pneumococcosis E A Aslett T W Davies and T I Jenkins—p 308  
Dose Contour Finder for Symmetrical and Unsymmetrical Radiation Beams P H Flanders—p 314  
X-ray Treatment of Carcinoma of Esophagus D W Smithers—p 317

**Occupational Disease in Boiler Scalers**—Pulmonary lesions in boiler scalers are due to the dust inhaled during scaling. A boiler scaler has not only to remove the scale precipitated on the walls of the boiler but also to clean the flue. Every boiler scaler is exposed to the dust of both the flue and the scale. Dunner describes pulmonary lesions of 12 boiler scalers whose ages ranged from 15 to 70 years. The symptoms bear no relation to the time spent in this work. There were scalers who had worked seventeen to forty-five years before they felt compelled to see their doctor for chest trouble. The symptoms are not characteristic, they are like those of chronic bronchitis or emphysema, but it is noteworthy that severe pains in the chest or dyspnea made some scalers give up their work. A small hemoptysis was noted in 2 cases. The sputum should be examined thoroughly for tubercle bacilli at certain intervals, since tuberculosis may complicate every dust disease of the lungs. As regards the roentgenologic aspects, the author differentiates three types. In the first type there is uniform mottling all over the lungs, in the second type there exist aggregates in addition to the mottling, in the third type fibrosis predominates. The author recommends routine clinical and x-ray examinations of boiler scalers at regular intervals. They should be granted the same rights for compensation as other workers exposed to pneumoconiosis.

### Lancet, London

2 373-400 (Sept 25) 1943

- \*Limb Compression in Tube Shelter Disaster E G L Bywaters—p 373  
\*Local Therapy of War Wounds II With Sulfasuxidine R J V Pulvertaft and D H MacKenzie—p 379  
Experimental Alloxan Diabetes in Rat J S Dunn and N G B McLethie—p 384  
Tuberculosis at Children's Hospital Analysis of Cases—p 387

**Limb Compression in Shelter Disaster**—Bywaters reports that among 60 injured survivors of a shelter disaster 12 showed signs of muscle damage. One died of other injuries soon after release, 1 developed a high grade uremia but ultimately recovered, the remaining 10 showed every grade of injury from severe muscle damage to skin erythema only, and all recovered. The course was similar to that of the "crush syndrome"—ischemic muscle necrosis following burial beneath debris as the result of aerial bombardment—but less severe, perhaps because of the short time of compression (one and one-half to two and one-half hours). Quantitative estimation of myohemoglobin creatine and potassium excretion gave a basis for the calculation of the amount of muscle damaged, this was the best guide to the severity of the lesion and ran parallel to the duration of albuminuria and to the local plasma loss as calculated from (a) hemoconcentration (b) Crooke and Morris's figures for dye distribution and (c) limb swelling. No conclusions can be drawn as to the efficacy of alkali therapy. The fact that 5 patients whose urine was rapidly made alkaline showed no renal failure, whereas 1 patient subject to exactly the same trauma of a similar duration and extent but without alkalization subsequently developed uremia is no complete proof of the efficacy of alkali.

**Local Succinylsulfathiazole Therapy of War Wounds**—According to Pulvertaft and MacKenzie succinylsulfathiazole when taken by mouth is to a small extent broken down to sulfathiazole in the intestinal tract. Its use is indicated in

colonic surgery and in abdominal gunshot wounds. Previous workers claimed that succinylsulfathiazole is split by bacteria to yield free sulfathiazole. It therefore seemed possible that external application might provide a continuous potential source of free sulfathiazole, the rate of breakdown being roughly proportional to the severity of the infection. The rate of absorption and degree of breakdown were compared with those of sulfanilamide and sulfathiazole. It was found that the breakdown of succinylsulfathiazole into free sulfathiazole in ordinary solvents—including plasma, cerebrospinal fluid and fluid from wounds—is too small to produce a dangerous blood concentration. The breakdown is increased by rise of temperature. Succinylsulfathiazole applied locally in the form of a 20 per cent hydrous wool fat cream appeared to limit quickly and effectively the gram-positive flora, control suppurations and accelerate healing. No toxic or irritant properties were noted. Absorption was less than 1 mg per hundred cubic centimeters of blood. The cream was heated to 40 C and then applied to wounds with a syringe used as a grease gun. The "reservoir" potentialities of succinylsulfathiazole are a unique feature. If the drug is used intraperitoneally, the hydrous wool fat cream should not be used, as it acts as a foreign body. Probably a microcrystalline form would be best. The authors present the results obtained in 8 cases.

### Helvet. Physiol. & Pharmacol. Acta, Basel

1 1-112 (No. 1) 1943 Partial Index

- 'Technical Reaction' and Its Physiologic Significance S. Bürgi —p. 3  
 \*Night Blindness and Vitamin A A. Fleisch and J. Posternak —p. 23  
 Relations of Hypothalamus to Respiratory Metabolism W. Bloch —p. 53  
 Central Mechanism of Respiratory Reflexes of Vagal Origin I. Localisation of Inspiratory Center O. A. M. Wyss and M. Croisier —p. 89  
 Relation Between Organ Metabolism and Age of Rats W. Schuler —p. 105

**Night Blindness and Vitamin A**—Fleisch and Posternak studied visual adaptation to obscurity with the adaptometer of Engelking and Harting in 89 Lausanne school children aged between 9 and 12 years. The investigations were made during the early part of 1942 at a time when, because of rationing, the vitamin A content of the diet was probably inferior to that prevalent before the war. At the first examination the threshold of perception was higher than at subsequent examinations, which must be attributed to the fact that the children were not familiar with the apparatus. The second, third and fourth measurements furnished mean constants. Previous to the fourth examination half of the children received, in addition to the vitamins contained in their diet, 159,000 international units of vitamin A divided over fifteen days. Such a dose of vitamin A will cure night blindness due to vitamin A deficiency. This large dose of vitamin A did not modify the visual adaptation of the children. Those who received the vitamin A supplement had an average adaptation curve which was identical with that of those who had not received vitamin A. The authors conclude that during the months from February to May 1942 Lausanne school children had no night blindness and no vitamin A deficiency. This favorable result differs greatly from observations made in other countries, where high percentages of night blindness were detected.

### Prensa Médica Argentina, Buenos Aires

30 1313-1356 (July 21) 1943 Partial Index

- Globular Volume, Globular Concentration and Hemoglobin in Children D. Fuks —p. 1313  
 Rectosigmoidal Cancer Colectomy R. Finocchietto —p. 1337  
 \*Peptic Ulcer of Esophagus C. Bonorino Udaondo, V. D'Alotto and J. Nasio —p. 1342

**Peptic Ulcer of Esophagus**—According to Bonorino Udaondo and his collaborators peptic ulcer of the esophagus is rare. Many cases reported in the literature are cases of infectious esophagitis erroneously diagnosed. The clinical symptoms and endoscopic findings of the two diseases are similar. Sternal and xiphoid pain which radiates to the interscapular region is the most frequent symptom of peptic esophageal ulcer. The pain can be elicited by pressure on the lower pole of the spleen. It appears either immediately after swallowing of solid

food or with the late rhythm of pain of a gastric ulcer. Dysphagia develops in some cases and is of diagnostic value. In rare cases it is of a paroxysmal type. Regurgitation of food particles streaked with blood and blood in the feces are frequently encountered. Acute hemorrhages from the mouth indicate a grave prognosis. Clinical diagnosis is confirmed by roentgenography and by endoscopy. The esophageal peptic ulcer is easily demonstrated when it is located on the anterior aspect of the lower third of the esophagus. The ulcer is made manifest in the roentgenogram as loss of tissue or as a niche. The ulcer can be visualized by endoscopy. It is covered by an exudate, does not infiltrate its base and does not narrow the lumen of the esophagus. Perforation and hemorrhage are frequent complications. The author reports a case of esophageal ulcer with a biopsy which revealed metaplastic tissue with cells of the gastric fundus. Similar cases have been reported in the literature. They point to the pathogenic role of aberrant gastric mucosa in the various segments of the esophagus.

### Revista de la Asoc. Med. Argentina, Buenos Aires

57 281-342 (June 15) 1943 Partial Index

- \*Changes of Electrocardiogram of Allergic Origin M. Pantolini —p. 286  
 Asthma and Pregnancy J. J. Crotogini and A. Giampietro —p. 293

**Electrocardiogram of Allergic Origin**—Pantolini studied electrocardiograms of 3 adult patients during an allergic shock caused by ingestion of food to which they had been allergic for many years. The patients suffered in childhood either from asthma or from migraine. The electrocardiogram of 1 patient showed sinus tachycardia in the course of which a sinus block with a complete stop of heart action for one instant occurred. Bradycardia (50 to 60 per minute) and a change of the PR interval (eighteen hundredths of a second) were observed in the second patient. The electrocardiogram of this patient showed, when the allergic shock was over, a heart frequency of 80 beats per minute and a PR interval of fourteen hundredths of a second. The electrocardiogram of the third patient showed paroxysmal tachycardia which disappeared after subsidence of the shock. Allergic substances stimulate either or both the sympathetic and the vagal system. Recurrence of attacks was prevented by elimination of the allergic food.

57 471-522 (July 30) 1943 Partial Index

- \*Ayerza's Disease Modern Conception M. R. Castex and E. L. Capdehourat —p. 474  
 Metastatic Abscess of Prostate with Staphylococci R. Ercole and C. E. Echesortu —p. 503

**Ayerza's Disease**—According to Castex and Capdehourat, Ayerza's disease presents three stages of chronic bronchitis, of bronchopulmonary and of cardiac involvement. Chronic bronchitis is caused by a toxic infection, trauma of the bronchial mucosa from inhalation of gases, dusts and chemical substances, unfavorable climatic and temperature changes, alcoholism and any disease which lowers the resistance of the bronchial mucosa. The disease begins in youth or in early adult life. It may be present with or without dilatation of the bronchial tree and peribronchial sclerosis. The general involvement of the alveolar bronchioles is manifested in bronchograms as a "tree in winter" without any foliage due to lack of filling of the alveolar bronchioles with the contrast mass. The disease progresses to the second and third stages in persons organically predisposed. Sclerosis of the pulmonary artery and chronic pulmonary emphysema with some degree of rigidity of the thorax develop during the second stage. Insufficient oxygenation of the blood in the pulmonary alveoli leads to general hypoxemia and to hypercapnia. Acute (black) cyanosis in this period is due mainly to hypoxemia, which is also the cause of dyspnea, polyglobulia and increased hemoglobin in the blood. Chronic hypercapnia is the cause of the diminished stimulation of the center of respiration, torpor, somnolence, dilatation and paralysis of the peripheral capillaries and increased alkali reserve. The hemodynamic disturbances and clinical symptoms of the second stage are associated with signs and symptoms which show progressive dilatation and hypertrophy of the right side of the heart. Myocardial insufficiency, predominantly of the right chamber, develops in the third stage, during which the cyanosis is excessive. The therapy during

the first stage is directed toward the chronic bronchitis. Inhalations of a spray of sulfanilamide solution are of value. Inhalations and subcutaneous injection of a mixture of oxygen and carbon dioxide and respiratory gymnastics are of value in the second stage. The therapy of the third, the cardiac, stage of the disease is directed toward alleviation of cardiac insufficiency.

### Revista Medica de Chile, Santiago

71 615-712 (July) 1943 Partial Index

- Acute Coronary Occlusion F Rojas Villegas and E. Lagos Pinto —p 615  
Bromsulphalein Test in Clinical Practice H Alessandri H Dueci and E Moya.—p 625  
Treatment of Prostatic Carcinoma by Bilateral Extracapsular Orchiectomy and Administration of Diethylstilbestrol Dipropionate E Ibarra Loring and A Marchant.—p 639

**Coronary Occlusion.**—Rojas Villegas and Lagos Pinto analyzed the data on 50 patients presenting clinical and electrocardiographic features of acute coronary occlusion. The condition was most common in the fourth decade of life and was predominant in males. The incidence was higher among persons exposed to constant intellectual and emotional stress. Heredity and tobacco seem to play a significant part as etiologic factors. Precordial pain with characteristic irradiation was the most frequent symptom. The occurrence of severe shock in the acute coronary occlusion was regularly associated with a poor prognosis, being present in all patients who died. Age was also an important factor in determining the ultimate outcome, all deaths occurring in patients over 50 years of age.

**Bromsulphalein Test.**—For the evaluation of liver function in normal and pathologic conditions, Alessandri and his collaborators compared the bromsulphalein test with the cephalin cholesterol flocculation and the sodium benzoate test. In 10 normal persons thirty minutes after the intravenous injection of 5 mg of bromsulphalein per kilogram of body weight, values lower than 10 per cent of the dye were detected in the serum. Retention above 10 per cent should be considered as due to abnormal liver function. Twenty-five patients with clinical diagnosis of cirrhosis of the liver were studied. In 22 serum bilirubin was higher than normal. Twenty-four exhibited an abnormal degree of bromsulphalein retention. Cephalin cholesterol flocculation was positive in 19. The sodium benzoate test was abnormal in 15. The Takata-Ara reaction was positive in 17. In 3 patients with liver damage as evidenced by hepatomegaly, hyperbilirubinemia and positive cephalin cholesterol flocculation, the bromsulphalein test gave normal values. In all cases of cardiac insufficiency there was pathologic retention of bromsulphalein. The test was normal in localized pathologic conditions such as liver carcinoma and liver abscess and in cases of lead, manganese and arsenic intoxication. The combined use of the tests studied should offer in clinical practice the best evaluation of the degree of liver damage.

### Revista Medica de Rosario, Rosario

33 491-596 (June) 1943 Partial Index

- Lymphomatosis J P Picena.—p 528  
I Agglutinin M Balaguer.—p 564

**I Agglutinin.**—Balaguer has performed in the course of the last three years, more than three thousand blood transfusions. He observed the phenomenon of autoagglutination in 4 cases. The blood of the first 2 patients agglutinated that of 18 donors of all blood groups including blood of universal donors. It disappeared from the blood serum in twenty-four hours. Two patients had acute and chronic insufficiency of the liver respectively. Sedimentation rate of red cells was greatly increased. Autoagglutination was intense. The blood agglutinated without control blood serum, with control blood serum of the group 2 and still more intensely with control blood serum of the group 3. The centrifugated serum agglutinated the erythrocytes of all group types including that of universal donors. Agglutination increased in the blood preparations which were kept on ambient temperature and still more in those which were kept in the ice box for fifteen minutes at a temperature of 2 C. It diminished in blood smears heated to a temperature of 37 C or kept in an incubator at a temperature of 37 C. The blood serum of these patients agglutinated the

erythrocytes of the blood of the groups A and AB in a dilution of 1 to 256 and those of the groups O and B in dilutions of 1 to 128 and 1 to 16. Simonin's test of saturation of the agglutinins in 1 cc of blood serum with repeated centrifugation of the serum after successive agglutinations from addition of one drop of the serum gave the following results. Agglutination stopped after five drops of the serum were added to blood of the group B seven drops of the serum to blood of the group O, ten drops to blood of the group AB and eleven drops to blood of the group A. The authors believe that normal blood contains I agglutininogen but not I agglutinin which is the cause of autoagglutinations. In cases of either chronic or acute liver insufficiency the structure eliminates I agglutinins. The latter are destroyed within twenty-four hours in preserved blood serum. The effects of I agglutinins are selective for the various types of erythrocytes. Agglutination increases in a cold temperature and diminishes with a temperature of about 37 C. The presence of I agglutinins in the blood is a constant symptom of liver insufficiency, especially in advanced and severe cases. Transfusion is therefore contraindicated in the advanced stages of liver insufficiency. Serologic tests should be performed in benign cases of liver insufficiency before transfusion is given, to determine whether or not I agglutinins are present.

### Archiv fur Kinderheilkunde, Stuttgart

125 113-160 (March 24) 1942 Partial Index

- Problem of Acute Coronary Circulatory Disturbance During Infancy P von Koss.—p 124  
\*Keratomalacia and Vitamin A Content of Food of Infants H Goll —p 144  
Demonstration of Meningococci in Skin G Bonell.—p 153

**Keratomalacia and Vitamin A Content of Food of Infants.**—Goll reports a case of keratomalacia. The infant, aged 10 weeks, had been fed milk from the family cow. The vitamin A content of the milk of this cow was suspected to be low, because she had received no green feed for months (end of April). Examination of the milk revealed that the vitamin A content was at the lower limit of normality. Thus, although the child had received comparatively small amounts of vitamin A it received not less than many other nurslings who do not develop keratomalacia. That the ocular lesion was keratomalacia was definitely proved by the clinical aspects, by epithelial smears from the cornea and conjunctiva, by the vitamin A deficiency of blood and urine and by the prompt response of the lesion to the administration of a vitamin A preparation. The author cites various possible factors which might explain why on practically identical diets, some infants develop keratomalacia and others do not. The author believes that there are individual differences in vitamin A requirements and in the susceptibility to lesions brought on by deficient diets. A local predisposition of the eye might play a part.

125 161-208 (April 24) 1942 Partial Index

- Modern Treatment of Gonorrheal Vulvovaginitis in Children H Lohe —p 161  
\*The 1937 Poliomyelitis Epidemic in Zurich with Particular Consideration of Early Symptoms and Treatment W Abegg.—p 166  
Familial Occurrence of Congenital Myxedema R Pfaffenbichler —p 185  
Significance of Vomiting in Diphtheria A Beer.—p 189  
Cardiac Conduction Disturbances in Scarlet Fever A Beer.—p 194

**Epidemic of Poliomyelitis in Zurich.**—Abegg reports observations on 167 cases of poliomyelitis observed in the course of the 1937 epidemic in Zurich Switzerland. The treatment consisted chiefly in the administration of serum and of blood transfusions. The serum consisted of a mixture of convalescent and so-called contact serum. The efficacy was not entirely convincing. Of the 167 patients, 623 per cent recovered, 19.2 per cent were improved, 8.9 per cent were not improved and 9.58 per cent died. Of the 16 patients who died 7 were moribund at the time of hospitalization. Follow-up revealed that in 10.6 per cent of the patients the paralysis was so severe that they will be severely handicapped for life. No other defects remained besides the paralysis. The severe meningitic symptoms produced neither impairment of intelligence nor signs of parkinsonism. The character changes suggested by the parents or some of the children were more the result of relaxation in discipline due to pity than to organic changes.

## Der deutsche Militärarzt, Berlin

7 541-604 (Sept) 1942 Partial Index

- \*Experiences with Atabrine and Calcium in Treatment of Typhus P van Meerendonk—p 541
- Muscular Symptoms Following Trichinosis and Suitability for Military Service G B Gruber—p 542
- Suggestion Regarding Therapy of Serum Disease E Leitritz—p 548
- Acetylsulfamylamide in Treatment of Trichoma K Oberhoff—p 548
- Spirillosis of Oral Cavity H A Guss—p 553
- Difficulties and Changes in Treatment of Infected Gun Shot Fractures W Rückerl—p 560
- Indications for Amputation on Battle Field H Hellner—p 570
- Improved Apparatus for Drip Infusion at Main Dressing Station P Brandenburger—p 576
- Necessity of Early Care for Injuries of Nose and Sinuses J Berendes—p 579

**Atabrine and Calcium in Typhus**—Although atabrine treatment of typhus as described by van Meerendonk in an earlier report had reduced the mortality of patients between 30 and 45 years of age by about one third, observations in 225 cases revealed that it had not given the favorable effects that had been expected from it. He believed that a severe impairment of the vascular and capillary system was responsible for the hemorrhagic exanthem as well as for the encephalitis. The more intensive yellow coloration of the skin of typhus patients treated with atabrine, as compared with that of malaria patients given the same treatment, is a further indication of vascular and capillary impairment. Van Meerendonk assumed that calcium deficiency existed in the blood of typhus patients and therefore decided on an intensive calcium therapy. The severest cases in the age group between 20 and 40 years responded to calcium therapy with prompt defervescence, the mortality was zero. Severe cerebral symptoms and impairment of hearing ceased to occur, the rash disappeared earlier and did not become hemorrhagic, yellow staining was reduced. Estimation of the calcium content of the blood of typhus patients revealed values as low as 6 mg per hundred cubic centimeters. Patients treated with calcium did not exhibit the abnormally low blood pressures. The incidence of bronchopneumonia diminished. The combined atabrine and calcium therapy was employed in the following manner. The patient was given a 0.1 Gm tablet of atabrine three times daily and from 10 to 20 cc of a 20 per cent solution of calcium gluconate, or, if this was not available, the same amount of a 10 per cent solution of calcium chloride. In severe cases, up to 40 cc of these solutions were given daily. Atabrine can be discontinued at the end of seven days or at the time of defervescence, if this occurs sooner. Calcium therapy should be continued for some days after the cessation of fever. The author reaches the conclusion that atabrine acts on the causal organism of typhus, while calcium influences the organic changes.

## Munchener medizinische Wochenschrift, Munich

89 391-414 (May 1) 1942 Partial Index

- \*Experiences of Specialists in War and Peace Time with Injuries of Facial Portion of Skull F Specht—p 391
- Diagnosis of Typhus by Microscopic Examination of Roseola A Dietrich—p 395
- Archlike Decline of RST Interval H Ritter—p 395
- Vitamin A Storage in Infants H Goll and L Fuchs—p 397
- General Practitioner and Synthetic Vitamins E Traßel—p 400

**Injuries of Facial Portion of Skull**—Specht emphasizes that the facial portion of the skull encloses a complex cavity which is of considerable functional importance. The rhinologists should make the diagnosis and decide on the treatment. Intracranial complications and septic conditions may result from nasal infection in normal circumstances and even more frequently after injuries. Early prevention of adhesions and of obstruction of the accessory cavities is of the greatest importance. Recovery in severe cases of osteomyelitis originating from accessory cavities may be obtained by radical surgical intervention. Immediate correction is more simple and less dangerous. Internal healing may be obtained only by rhinologic methods. Involvement of adjacent or of more distant organs should be kept in mind. Basal skull fractures with ear involvement are frequent. There are also less common paths of infection such as the subperiosteal abscess of the temporal bone or of the zygomatic arch resulting from suppuration of the middle

ear. Whether or not the injured will get the correct treatment depends on competent organization, which, however, need not be of vital importance provided the physician who is first called to attend the injured will consult with all the specialists concerned as soon as possible.

## Wiener klinische Wochenschrift, Vienna

55 41-60 (Jan 16) 1942 Partial Index

- Indication for Surgical Treatment of Chronic Constipation Permanent Results H Finsterer—p 42
- \*Therapeutic Effect of Injections of Diiodotyrosine Preparations H Pieber and H Seyfried—p 46
- Importance of Rapidity of Sedimentation of Blood Corpuscles in Tuberculosis H Pondecker—p 49
- Intravenous Nonspecific Immune Therapy of Rheumatic Diseases R Hoschek—p 51

**Diiodotyrosine Preparations for Hyperthyroidism**—Pieber and Seyfried report their experiences with intramuscular and intravenous injections of diiodotyrosine preparations in 20 cases of hyperthyroidism. Mild cases, particularly in the young, reacted exceedingly well. Peroral diiodotyrosine therapy has been tried with satisfactory results. One should not miss the optimum time at which to perform the operation in the more severe cases of hyperthyroidism. Conservative treatment with diiodotyrosine preparations gives satisfactory results, so that surgical intervention may be omitted in a considerable portion of the cases. Diiodotyrosine therapy is an excellent preparatory treatment to surgical intervention. It has the advantage over Plummer's iodine therapy in that it may be stopped at any point. No untoward reactions will occur if the surgical intervention is postponed for some reason. Satisfactory results may be expected from the injections of diiodotyrosine in cases in which the Plummer treatment was ineffective or in which symptoms were caused by the delay of the surgical intervention. Good subjective results were obtained in climacteric hyperthyroidism and in cases associated with severe hypertension and generalized arteriosclerosis. Twenty to 100 mg of the substance injected daily for from two to four weeks will produce no subjective reactions.

55 121-140 (Feb 13) 1942 Partial Index

- Cutaneous Phenomena in Chronic Leukosis and Lymphogranulomatosis (Paltauf Sternberg) H Fuhs—p 121
- Therapy of Sterility A I Amreich—p 125
- \*Testosterone Therapy of Peripheral Circulatory Disturbances W Ernst—p 131

**Testosterone Therapy of Peripheral Circulatory Disturbances**—Ernst treated 29 patients with peripheral circulatory disturbances with testosterone propionate. The patients were from 40 to 70 years of age, 55 years on an average. The peripheral circulatory disturbances were organic in 15 cases and functional in 14. The clinical picture of intermittent claudication was present in 9 cases and that of angina pectoris in 11. Hypertension, hypotension, hyperthyroidism, anemia and hypertrophy of the prostate were associated conditions. Intramuscular injections of 10 mg of testosterone were made every second or third day for one or two weeks, followed by injections of 5 mg at the same intervals. In cases of severe intermittent claudication or with threatened gangrene a single initial dose of 25 mg was injected and the dose was later reduced to 10 and 5 mg. Injections of 5 mg were continued twice or three times weekly for three to four weeks after improvement had been obtained. The average amount of testosterone propionate administered varied from 45 to 155 mg, being 76.4 mg on an average. There were no toxic reactions. Bluish discoloration or extreme pallor of the skin disappeared and the color of the skin was restored to normal. Trophic ulcers healed. Subnormal local skin temperature returned to normal. Heart action improved. The typical sudden pains became less severe and less frequent and finally disappeared. The turgor of the skin became firm. There was a strong subjective sensation of heat in the extremities. Tinnitus aurium and vertigo disappeared. Treatment of peripheral circulatory disturbances with testosterone propionate is recommended particularly in cases in which the improvement of the physical and psychic state is of equal importance to that of the circulatory disturbances.

## Book Notices

**Advances in Pediatrics, Volume I** Edited by Adolph G. De Sanctis  
31 D New York Post Graduate Medical School and Hospital Columbia  
University New York. Cloth Price \$4.50 Pp 306 with illustrations  
New York Interscience Publishers Inc., 1942

This is the first of a series of volumes offered as reviews of specialties in medicine. The present volume includes articles on toxoplasmosis by Albert B. Sabin, virus diseases by H. L. Hodes, chemotherapy by B. W. Carey, electroencephalography by N. Q. Brill, the role of vitamin K in hemorrhage in the newborn period by H. G. Poncher, persistent ductus arteriosus and its surgical treatment by Robert E. Gross, the premature infant by Abraham Tow, tuberculosis by W. E. Nelson, endocrinology by M. B. Gordon and a final chapter dealing with a variety of subjects by the editor of the volume, A. G. De Sanctis and G. E. Pittinos. Each of the sections is accompanied by a bibliography of references to recent periodical literature. The authors are men of recognized competence in the fields that they discuss. For the pediatrician who wishes to be abreast of problems of current interest the book may be well recommended.

**The Pharmacopoeia and the Physician. A Series of Articles on the Use in Therapy of Pharmacopoeial Substances Which Appeared in The Journal of the American Medical Association. Second Series. Fabrikoid.**  
Price \$1.50 Pp 380 Chicago American Medical Association 1943

The articles included in this book have been published from time to time in THE JOURNAL. A previous series was published in the period 1936 through 1938. The popularity of that series of articles led to the production of the present volume, which is made available in handy form on thin paper. The articles are among the most practical of all the available contributions in therapy. Such chapters as those by Marvin on the therapy of dropsy, by Brennemann on pediatric emergencies and by Stillians on the therapy of pruritus are for example, immediately useful to every general practitioner in his work. The article on epilepsy discusses the possibilities of control by a wide variety of recently developed drugs and techniques. Similarly the Rackemann contribution on asthma will be immediately helpful to the physician who must see to it that patients with this chronic disturbing condition are kept comfortable. The demand for this work has been so great that it is being widely circulated by the cooperation of the Board of Trustees of the U. S. Pharmacopoeia. A translation is also being made available in Spanish.

**Banting as an Artist.** By A. J. Jackson. With a memoir by Frederick W. W. Hipwell. Paper Price \$1 Pp 37 with illustrations. Boston: Bruce Humphries Inc. Toronto: Ryerson Press 1943

In preparation for this booklet an attempt was made to discover every piece of Sir Frederick Banting's art work in Canada, the United States, Great Britain and elsewhere and to make a reference to it. Following a brief sketch of the life of Banting, the author presents a critical note on his work as an artist. Banting was especially devoted to the scenery of Canada, but his sketch book accompanied him throughout the world. The book includes a catalogue of his paintings with the area where the painting was made and the name of the present owner. There are also lists of his drawings and wood carvings. Many of the paintings are owned by physicians, but the vast majority are still in the possession of Lady Banting.

**Unit Medical Records in Hospital and Clinic.** By Dorothy L. Kurtz. Cloth. Price \$2 Pp 110 with 8 illustrations. New York: Columbia University Press 1943

In recent years the competent medical record librarian has become a professional of no mean attainments. Credit for the development rests principally on the leaders in the field themselves. Creditable publications consequently have come with ever increasing frequency from the record librarians. This book fills in that group. It does not pretend to present information on all aspects of the work of the medical record librarian but it does give much valuable information on the purposes and proper management of the so called unit medical record—the patient's record both in the hospital and in the outpatient department. It will contribute materially to the work of medical record librarians and consequently to the medical profession.

**O. Ieobnaom deystvil antiretikulyarnoy tsitotoksicheskoy syvorotki "ATsS". Sbornik tezisev dokladov zaslushannykh na konferentsii 12-14 iyulya 1942 goda pod redaktsiei I. so vsstupitelnoy statey okad. A. A. Bogomolets. [On the Therapeutic Action of the Antireticular Cytotoxic Serum ACS. Abstracts of Reports Delivered at the Conference on the 12th-14th of July 1942 with an introductory article by the editor A. A. Bogomolets.] Cloth. Pp 168. Ufa: Izdatie Akademii Nauk USSR 1942**

This small volume contains reports on the therapeutic effect of the antireticular cytotoxic serum. The new therapeutic agent, the result of years of research by Prof. A. A. Bogomolets, is based on the conception that the connective tissue of an organism contains a number of hitherto uninvestigated physiologic functions. The aim of the antireticular cytotoxic serum is to stimulate these functions and to intensify active immunity.

The serum is produced by the immunization of horses with the cells of the spleen and bone marrow taken from a human corpse. The determination of the amount of cytotoxins in the serum obtained is important. It was found that the amount of cytotoxins in the serum of the immunized animal can be determined by applying a modification of the reaction of complement fixation (the reaction of Bordet-Gengou), that is, by using an antigen for the reaction of complement fixation, the same antigen as is used for the immunization of the animal. To determine the strength of the serum it is necessary to find out in what dilutions it still gives a complete fixation of the complement. Therapeutic serums are those which give a complement fixation in a dilution of not less than 1:100. The serum is injected subcutaneously in an isotonic solution in the dilution of 1:10. The stimulating dose of the diluted serum equals 0.3-1.0 cm. Small doses of cytotoxic serum have a stimulating effect, whereas large doses have an inhibitory effect. The reactivity of the physiologic system of connective tissue can be determined by a number of tests, such as (1) the dermal test with trypan blue, (2) blood morphology, (3) the sedimentation speed of erythrocytes, (4) the titer of the complement, (5) the opsonic index and (6) the phagocytic activity of the leukocytes. On the basis of more than 2,500 clinical cases presented at the conference, a favorable effect was established in cases of war trauma and in (1) the delayed healing of fractures, sluggish and infected wounds, generalized purulent infection, frostbites and burns of the second and third degree and infected injuries of the eye, (2) a number of infectious diseases such as spotted typhus, puerperal and gynecologic sepsis, rheumatism, unresolved pneumonia and abscess of the lung, (3) traumatic and infectious diseases of the central and peripheral nervous system and a number of psychoses, and (4) diseases due to trophic disturbances of the tissue, such as ulcer of the stomach, ozena and eczema. Of the 1,500 cases of various wounds and injuries in which one would expect the most striking effect of the serum, only 60 per cent gave "positive results" while 40 per cent gave "negative results." With the exception of the report on ozena, most of the results rather deal in generalities. The theoretical basis for this new therapy appears to be well thought out and to contain an intriguing biologic concept. The clinical results are not altogether convincing. All that can be said for the present is that the work is interesting and original. The volume is in Russian with abstracts in English.

**What the Citizen Should Know About Wartime Medicine.** By Joseph R. Darnall. M.D. Lieutenant Colonel Medical Corps United States Army and V. L. Cooper. Cloth. Price \$2.50 Pp 237 with 11 illustrations by André Jandot. New York: W. W. Norton & Company Inc. 1942

The present world war placed on the medical profession a burden beyond any that has ever before been its responsibility. Few people really understand the immensity and the complexity of the task of the Army Medical Department. Hence the book of Lieut. Col. J. R. Darnall is especially valuable in explaining the machinery for the examination of selectees, the organization and function of the medical departments of both the Army and the Navy and the work of these departments in the theater of military operations, in the home area and in the combat zone. Especially interesting is the chapter entitled 'Medicine Takes to the Air,' dealing with phases of medical care during war that did not exist in previous wars. Most useful to the average reader are the sections on communicable diseases and other infectious diseases which are especially a military problem. The book is supplemented by a well chosen bibliography.



## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### THYROIDECTOMY FOR ADOLESCENT HYPERTHYROIDISM

To the Editor—I have heard an authority on thyroid disease state that the thyroid gland should never be removed from a girl between 12 and 16 years of age for hyperthyroidism. Is this the general consensus?

M D, Iowa

ANSWER—Two main arguments form the basis of the opinion expressed by a few authorities that thyroidectomy is an undesirable procedure for the treatment of adolescent hyperthyroidism. 1. Thyroidectomy would lead to postoperative myxedema and pseudocretinism in an age period of physical growth and mental development. 2. Hyperthyroidism at this age would tend toward spontaneous and permanent remission. However, these contentions never have been supported by clinical facts and remain on a purely theoretical basis. Well controlled studies of the subject have shown that, as a rule, postoperative myxedema does not occur in these cases and growth and development of the children on whom thyroidectomy is performed proceeds in an entirely normal manner. In many cases conservative treatment will fail to control the condition, and hyperthyroidism will either persist or recur after a period of time. The delay in surgical intervention in hyperthyroidism of adolescence has led to the development of disturbances in behavior and psyche with the consequent harmful effects during the formative adolescent period. From an extensive review of the literature concerning the pros and cons of thyroidectomy in adolescent hyperthyroidism and from the analysis of their own carefully controlled data Black and Webster concluded that all children under 18 years of age having hyperthyroidism should be subjected to subtotal thyroidectomy at the earliest moment compatible with adequate preparation. This attitude represents the consensus on the subject. References:

- Black, J. B. Jr., and Webster, Bruce. Hyperthyroidism in the Adolescent. *J. Clin. Endocrinol.* 1: 859 (Nov.) 1941.  
Greene, F. I., and Mora, J. M. Thyroidectomy for Thyrotoxicosis in the Young. *Surg., Gynec. & Obst.* 53: 375 (Sept.) 1931.  
Wells, H. Surgical Treatment of Toxic Diffuse Goiter of Children. *Mém. Acad. de chir.* 63: 1229 (Nov. 17) 1937.

### PENICILLIUM AND PENICILLIN

To the Editor—What substance chiefly is used on which to grow the mold from which penicillin is now secured for medicinal purposes? I understand that the mold in Roquefort cheese is related botanically to the mold from which penicillin now is chiefly extracted. Is the Roquefort cheese mold especially rich in penicillin? Is the domestic cheese now being used in dressings for infected open wounds because of the rapid mold growth?

Alexander C. Hawc, M.D., Brooklyn

ANSWER—*Penicillium notatum* is grown on various liquid mediums for the purpose of producing penicillin. The common medium is composed of corn steep liquor, containing lactose or dextrose and a number of essential salts. Some strain of *Penicillium notatum* may be isolated from Roquefort cheese, but not all strains of *Penicillium* are capable of producing penicillin. The active antibacterial agent is developed by the mold during its growth in liquid medium. It is not present in large quantities in the mold itself. Before the question could be answered more specifically it would be necessary to isolate strains of the mold from cheese and test them for their capacity to produce active penicillin.

### BACK SUPPORTS AND TRUSSES NOT INDICATED FOR NORMAL WORKERS

To the Editor—In the last few months I have had a suggestion that a canvas back support and/or a truss be routinely furnished to all workmen engaged in laborious lifting as a preventive measure against development of inguinal hernia and back strains or sprains. My opinion is against this. I would appreciate your point of view.

S. Robert Thau, M.D., New York

ANSWER—Laboring men do not need a canvas back support to prevent back strains or sprains. As a matter of fact, such supports will probably induce muscle atrophy and will not protect against injuries. Such supports also inhibit the workman in performing the normal duties of his occupation, because he does not have the freedom of motion he would have without any support. A truss will not prevent a hernia. Inguinal hernias are congenital in origin and will probably develop in spite of a truss. In this case likewise a truss to prevent hernia would have an inhibitory effect on a man's occupation.

### JAUNDICE ASSOCIATED WITH MENSTRUATION

To the Editor—A white unmarried woman aged 34 has noted jaundice, which, as nearly as can be ascertained, had its onset at about the time of puberty. It first appears about two weeks before menstruation, reaches a peak about two or three days before the period, subsides rather rapidly after its onset and goes through the same course the next month. It is definitely more severe at one period than at another but is always present, sometimes in slight degree. There are no food idiosyncrasies, and fats and "heavy" vegetables are well tolerated. Stools are never clay colored, and belching and flatulence are not a problem. Chronic constipation is relieved by liquid petrolatum. The previous history is noncontributory. The family history reveals diabetes in the maternal grandmother, aunt, uncle and cousin. With some periods there appears a chronic cystic mastitis, the onset of the enlargement of the cysts corresponding rather closely with the onset of the jaundice and there is some relationship between the severity of the jaundice and the amount of mastitis present. The appetite becomes keen at the midmenstrual period, which corresponds to the onset of the jaundice and lasts for approximately one week. She says she cannot satisfy her appetite at this time. The menstrual periods are irregular, thirty-four to forty days, lasting four to five days and of moderate flow. Cramps and pain are not usual except that when the periods are late there is a tendency toward distressing cramps. The latter the flow, the more severe the jaundice, mastitis and cramps. On physical examination one week before menstruation the patient appears well developed and well nourished but not obese. The sclerae present an orange-yellow icterus. The skin, normally rosy, is now sallow. The breasts have multiple palpable tender nodules along the medial and inferior borders bilaterally. The abdomen, liver and spleen are of usual size. All other findings are essentially negative. There were 4,930,000 red cells, hemoglobin was 14.2 Gm. Fragility test gave initial hemolysis of 0.44 per cent and complete hemolysis 0.40 per cent. The urine test for urobilinogen was positive in a dilution of 1 to 10 and 1 to 20 negative at 1 to 30. The icterus index was 15.21. The direct Van den Bergh was negative, indirect, 2.9 mg. per hundred cubic centimeters. No cholecystogram was made. Search of available literature does not reveal any similar cases. Is such a syndrome recognized? Has any work been done on it?

M.D., Wisconsin.

ANSWER—This is a unique syndrome. Lichtman (Diseases of the Liver, Philadelphia, Lea & Febiger, 1942, p. 643) says that Senator has noticed jaundice repeated with each menstrual period in certain individuals.

The case probably represents some functional disturbance and it deserves further study to determine whether this functional disturbance is in the biliary tract (presumably a transient obstruction due to dyskinesia with spasm of the sphincter of Oddi) or whether it is a functional disturbance of the hepatic parenchyma. For this reason whatever tests are done should be done during the height of the jaundice and should be repeated in the free interval. The contrast between the findings at the two periods would be significant. The tests already done (presumably performed at the height of the jaundice) are inconclusive. They at least make a hemolytic mechanism improbable.

In addition to the tests already mentioned there should be cholecystograms, cholesterol and cholesterol ester determinations in the blood, cephalin flocculation tests (Hangar) and alkaline phosphatase determinations in the blood. Possibly also galactose tolerance tests and benzoic acid (hippuric acid) tests might be of help. It is reported that liver function shows diminution by the benzoic acid test during the first day of menstruation (Heilig, Robert, and Kantiengar, *N. L. Ann. Int. Med.* 16: 538 [March] 1942).

### PERMANENTLY ENLARGED BREASTS FROM PREGNANCY

To the Editor—A woman aged 30 had an enlargement of her breasts during her first pregnancy. She was unable to nurse the baby and the breasts remained enlarged. Now during the second pregnancy the breasts enlarged further. Is there any way of stopping their growth? M.D., New York

ANSWER—Apparently the forces which make for the development of mammary tissue include both the estrogenic and progesterational hormones of the ovaries and certain of the pituitary secretions. The only known way to reduce these stimuli would therefore be either extirpation or partial destruction of these glands, presumably by surgery or irradiation. Such methods could not be considered in clinical medicine. The alternative is, of course, plastic surgery, which would have to be delayed until after the approaching lactation period has ceased.

### INHERITANCE OF LEFT HANDEDNESS

To the Editor—Which hand will the offspring use when both parents are left handed (the relative percentage)? When there is one right handed and one left handed parent?

M.D., Alabama

ANSWER—The causes of right and left handedness are not clearly understood. Some studies suggest hereditary factors operating in some families, but the extent to which they do so is unknown. If both parents are left handed approximately 45 per cent of children are left handed. If only one parent is left handed about 12 per cent of children use the left hand. These statements are not based on large series but probably they are not grossly incorrect.

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## SIGNIFICANCE OF VISUAL DEFECTS IN WAR PRODUCTION EFFORT

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HAMMOND, IND.

Visual defects as they concerned the war production effort prior to 1943 were mainly those within industry. As the demand for guns, tanks, planes, ammunition and ships grew, it was reflected in an increasing demand for special tempered steel, chemicals, precision parts, armor plate and alloys. More had to be produced by each machine unit, fewer mistakes were allowable, less waste of material was permitted, more sensitive inspecting was called for. A direct correlation was found in graphs showing the relationship between accuracy and visual perfection and between lost time accidents and defects in visual performance. Here and there over the country it became imperative to conduct a visual survey of whole industries in which vision played an important part in all units of production. In other industries it became imperative to conduct sectional visual studies of special key employees—such as sorters, inspectors, crane operators and fine-part assemblers. This quickened effort to evaluate the part played by eyes in war production brought realization that visual skills are of utmost importance not only in selection of men for the armed forces but in placement and selection of men and women in the war industries.

The detailed data previously discovered necessary in evaluation of an employee's visual ability was built into the preemployment and preplacement pattern, namely, determination of the minimum visual standards for the job and adherence to them. These standards were simple groupings of the basic visual findings according to the visual demands of job groups and included (1) uncorrected acuity for distant and for near vision, (2) acuity with the glasses habitually worn, (3) work acuity, (4) muscle balance for distant and for near vision, (5) stereopsis and (6) color appreciation. To these basic findings, which designated a minimum amount of information, were added such special tests, of near vision (e.g., determination of the near point of accommodation and of convergence), as might be needed in selecting eyes for exceedingly intricate work done within 12 inches from the eye.

These visual tests, which are simple and yet so much more complete and more accurate than had previously been considered needful, had been studied statistically in 1940. They were reflected in certain percentages and graphs worked out both for men already on the pay rolls of industry and for applicants seeking jobs in industry. As is shown in the accompanying graph,

the percentage of defects of acuity, muscle balance, stereopsis and color vision were almost the same within industry as they were outside of industry in the labor market of that day. This labor market of course reflected the type of civilian reserve from which industry had to draw to increase its pay rolls. In a recently completed study of a war industry the same labor pool or civilian reserve, was analyzed as of 1943 as well as the level of defects within industry as of 1943 and the results were compared with those of 1940.

The picture revealed as of today is indeed a startling one. Its significance in terms of the war production effort is of immediate concern. First, what every one has sensed and what has often been stated as true without factual data to substantiate it has now been proved: Industry is indeed scraping the bottom of the barrel! In further analyzing the graph one finds that the percentages of visual defects given in table 1 were found in the civilian labor pool, or among the applicants, in 1940 and in 1943.

In 1940 and in 1943 the employees already on the pay roll showed the percentages given in table 2.

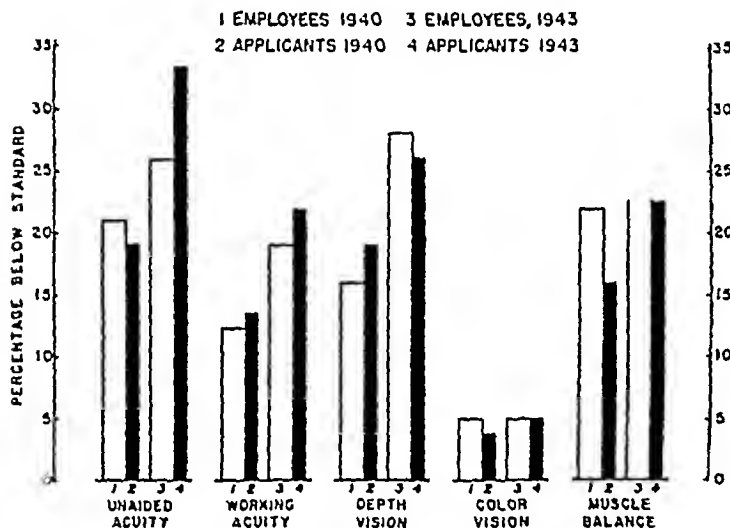
The percentage of defects among those who had already slipped by the admission tests and were at work early in 1943 has risen slightly, but most serious of all, the percentages of defects in the unaided eyes of the slowly dwindling stream of civilian applicants has doubled. This per se would not be so ominous if the percentage of defects among persons wearing their work correction was not also up, and almost to an equal degree. This means that not only has the task of further improving visual efficiency within industry become greater but the need of visual rehabilitation among the civilians of 1943 is very great. Salvaging of human eyes will become an even greater task in 1944 and 1945.

This problem immediately pre-ents itself to the three groups that are most directly concerned. First, management, needing greater visual perfection in its increasingly complicated production skills, must be more vigilant than ever in the use of screening tests for its applicants. There are now many jobs where a person with a wooden leg or one arm can turn out top work. But the jobs where he does not need to see well are indeed becoming rare. In some industries management is searching the highways and the byways for persons to take over its new and idle machines. In other industries it is searching for labor to staff its gigantic new production lines. It is at this point that war production turns to the second group directly concerned, the highly trained experts who can help to salvage the eyes of those men and women, the third group, who are waiting at the gates and otherwise will be rejected.

In order to appreciate fully this gigantic problem one must recognize many new factors, but one especially

that in order really to salvage this most precious human commodity—vision for today's urgent need—it is necessary to find new, speedy and directly controllable methods of conservation. Formerly an indifferent "Go see some one about your eyes and come back—if you can pass the vision test, maybe we'll have a job for you" was the statement of the employment office. Now in many vital industries it is essential to find out immediately, often actually inside the plant whether the man with 20/100 vision in each eye can have his vision brought to normal with glasses or the woman with 20/200 vision in the right eye and 20/20 in the left has an amblyopic right eye, optic nerve atrophy or macular retinitis. The latter can do her type of work with one eye, but has she a progressively ocular disease that will in due time affect her other eye? As the age level of applicants rises except for women and minority groups, the vigilance of the retractorist and the responsibilities of both the management and the ophthalmologist increase.

Men and women applying for war work form the group directly concerned. They come from among the ordinary civilians the citizens of the home communi-



Visual defects of employees and applicants in 1940 and 1943. The percentage of each defect was found to be higher among persons over 40 than among those under 40.

ties, many of whom have never worked in industry. They have worked in stores and homes and supplied the many services of modern existence, or they have not worked at all. In fact, they can truly be said to constitute the rank and file of the practice of any ophthalmologist in city or village. They therefore reflect the whole range of ophthalmic diseases and troubles encountered in office practice.

The consulting ophthalmologist working with the industries he is responsible for has now to supervise with extreme vigilance the entire industrial eye program: treatment of eye injuries, eye protection plans, job standard evaluations and rehabilitation procedures. He must study the applicants turned over to a refractorist for routine correction through failure in the screening tests. As the age level rises and the Manning tables become operative he has also to search for glaucoma, for early degenerative retinal diseases, for early lenticular changes and for early hypertensive signs in the fundi. Many of the applicants are totally unaware that anything is wrong, many have never had any sort of ocular examination, the vision of many can be saved. However, all this is only a small part of the problem which has been laid so suddenly at the ophthalmologist's

door. His vigilance must further extend itself. It must be carried into his private practice, he must assist local medical societies in setting up proper educational programs on the radio and in the newspapers, wherein people are urged to make sure that all is well with their eyes for their country's sake as well as for their own.

These facts lead to but one conclusion, namely that physicians in general have an exceedingly important

TABLE 1—Visual Defects in Civilian Labor Pool or Among Applicants

	1940	1943
Acuity unaided (naked eye)	18	34 (almost double!)
Working acuity (with whatever correction was worn)	14	23
Depth perception	18	26
Color appreciation	4	5
Muscle balance	16	23

and a direct responsibility in the war production effort. This responsibility is twofold. First, they must walk boldly out of their "ivory towers" and go directly to industry and offer their services. They must do this with an honest determination to be open minded and realistic. They must try not to let old stereotyped ways of doing things (even if these ways are good) interfere with their willingness to learn new ways, and quickly, if the occasion calls for them. This is a war, and it is their war. Management, labor, the farmer, the housewife and the 18 year old have learned new ways of doing things, and they have not always been pleasant ways. So too physicians need badly to loosen up their tight collar of hesitations and worrisome fears and get to work on the problems that only they are trained to solve, even if the new but necessary ways are unpleasant. To illustrate, I shall take an actual example—one industry and one day's group of 35 applicants who had been found to have substandard visual acuity in their original screening tests. These 35 represent according to statistics the average number of defects in acuity found for about every hundred persons "screened," namely about 35 per cent. The results of refraction were as follows. Of the 35, 18 who would otherwise have been left in class B were brought to normal with proper glasses and put into class A, 10 who would otherwise have been rejected conclusively were brought to normal with glasses and put into class A, and, 7

TABLE 2—Visual Defects Among Employees

	1940	1943
Acuity unaided	21	26
Working acuity	12	18
Depth perception	16	28
Color vision	5	5
Muscle imbalance	22	24

were rejected because of disease (for example, optic nerve atrophy, cataract, macular hemorrhage and old perforating injury of the eye).

In this particular war plant the visual standards had to be high because of the nature of the work—class A having 20/30 vision or better in both eyes. In terms of the war need, 28 of 35 applicants were salvaged immediately and put to work at class A jobs. Ten of these would undoubtedly have been lost entirely to this particular plant, at which they were applying, if they had simply been told to go get their eyes fixed. There

are still too many jobs open where nobody bothers about whether or not the applicant sees well. Eighteen of these applicants would have been denied class A jobs, and management in this plant, needing top visually qualified workers most urgently, would not have been able to use these 18 men except as sweepers and janitors and in similar capacities. In this instance of course, the ophthalmologist was working close to the day by day problems of the industry and was therefore actually responsible for equipping 28 or 35 men. This is the salvage figure for one day for one industry. Figured by the month it means an average of 800 to 850 men and women given a chance to work by being equipped to meet the requirements. Such salvaging should occur day after day, month after month in industry after industry, and it demonstrates how ophthalmologists can face their first responsibility by going forth to meet the needs of industry inside its gates.

The second great responsibility of the ophthalmologist is to make effective a newly conceived approach to the daily office routine and private practice. This is reflected by exercise of the utmost vigilance in

1 Correcting refractive errors for the job, asking wives and 17 year olds who are now working exactly what they are doing and prescribing accordingly

2 Using his previous knowledge or acquiring what more he may need, so as to give orthoptic training for occupational objectives. For instance, the small-parts assembly girl whose previous close work consisted in reading the latest best seller or sewing on buttons now does close work for eight to ten consecutive hours six days a week. She has an exophoria that gives her great discomfort and makes for many mistakes because of the blur produced. She can probably be fully rehabilitated by orthoptic exercises and good general medical treatment. A low hemoglobin content, a low basal metabolic rate, infected tonsils and abscessed teeth are luxuries in war time.

3 Searching for incipient glaucoma, removing cataracts, discovering the real causative factor in a contact dermatitis of the lids (brau, oil, paint, chemicals), curing a stubborn chronic staphylococcal conjunctivitis which causes extreme annoyance in the glare of an inspector's spotlight, taking care of patients with foreign bodies, flash burns and other injuries quickly (ahead of private patients), sending workers with minor injuries back to work as soon as possible, keeping a sharp lookout for scattered cases of epidemic keratoconjunctivitis and protecting the industrial worker by isolating the occasional infected school child or housewife, who might otherwise be the source of trouble for an entire plant.

4 Teaching parents how a neglected squint can keep Willie from flying a plane or perhaps being able to choose freely later in life a technical occupation in which binocular vision is essential. The ophthalmologist should take time and use pressure in 'selling' what is in his honest opinion the right thing to be done.

These itemized particulars of course form only a part of the full picture with which every busy ophthalmologist is daily occupied. The objectives have had to become streamlined in order to meet the challenge of a nation of workers. There are few if any "drones" left in the hive and their human counterparts had perhaps best be left sitting in reception rooms until the last.

Ophthalmologists do not need much more than an honest desire to learn something of industry's needs in the sphere of visual problems and a willingness to try to do things in new ways, new places and under new circumstances in order to take their proper and most important place on the home front. Visual defects are of real significance in the war production effort.

## ABSTRACT OF DISCUSSION

DR. H. GLENN GARDINER, Chicago. This is a graphic representation of what spells the success or failure of many such programs. There can be found here probably one of the greatest rehabilitation programs that has been brought forth during the war.

DR. T. L. TERRY, Boston. Dr. Kuhn mentioned determination of minimal visual standards for a given occupation. That is not easily obtained nor is it an exact determination, as the individual with superior mental ability could undoubtedly perform the required work with a lower visual standard than one with a less agile mind, provided, of course, asthenopia did not arise. It would serve a useful purpose if with every type of work a really scientific minimal visual standard should be established on a scientific basis. It is satisfying to note that this is being done. These tests of the individual workers do need to be as simple as possible so that they can be done accurately and rapidly without assuming that the applicant who is being tested is above average mentality. Dr. Kuhn's reference to color appreciation rather than tests for color blindness is well worded. Some who are not color blind still have faulty color appreciation, as evidenced by those who at first show evidence of color blindness in their test for military service and who, with some study of color appreciation, in turn appear to prove that they have attained adequate color vision for even the highly specialized branches of the armed forces. The optimistic point of view of Dr. Kuhn is noteworthy. Her reference to the important need of visual rehabilitation shows that many visual disturbances she has noted are to a certain extent, at least, not hopeless. To stress prevention of eye injury is a matter of great importance in this consideration as well. One type of condition that has come to my attention forcefully has been injury to the eye from spun glass. This patient has a small spill of spun glass  $\frac{1}{16}$  of an inch in diameter and  $\frac{1}{4}$  of an inch long projecting through the cornea into the anterior chamber within the pupillary area. Although it is flexible experiments show that such a glass spill will puncture the lens capsule before it bends. The information from the industrial manager is that this accident was due to the fact that the young employee did not follow directions in handling this material. Thus education in all mechanical means in preventing blindness is the answer to one phase of the problem.

DR. MORRIS DAVIDSON, New York. Dr. Kuhn's plea for an industrial orientation of ophthalmology is timely and desirable. The almost double incidence of uncorrected visual acuity defects in table 1, of which four fifths were found correctible to almost normal, the lack of parallelism with the incidence of corrected visual acuity particularly if qualified by, with whatever correction was worn, may simply mean that the civilian population is not receiving the same eye care in 1943 that it did in 1940. That depth perception shows less deterioration in table 1, and muscle balance less deterioration in table 2 would also suggest the same explanation. There is no doubt that there is a serious problem urgently calling for a solution. The problem is the organization of effective eye care for the industrial population. We need first a program of special training for such work, which should provide for departments of industrial ophthalmology in all graduate schools of ophthalmology and for the development of a standard technique of examination and a standard organization of ophthalmic care in industry. Educational work with industrial management is also needed to make it realize that visual defects undoubtedly account for a considerable proportion of accidents and that 'carelessness' to which 50 per cent of accidents are attributed is also partly the result of undiscovered visual defects among the industrial workers. Industrial plants with tens of thousands of employees do not realize the necessity of employing full time ophthalmologists to look after the workers' eyes properly. Until we have perfected our facilities for the training of more ophthalmologists we may take advantage of the abundance of optometrists and incorporate them into the organization of industrial eye care as technical assistants to ophthalmologists in charge.

Dr. HEDWIG S. KUHN, Hammond, Ind. Dr. Terry's mention of the difficulty of exact determination of minimal visual standards for a given occupation is quite true, but we do not need to start with exact determinations. We can greatly assist in placement if we do such simple things as eliminate all persons who lack depth perception from the lists of prospective crane operators, power machinists, tractor drivers and the like. The factor of superior mental ability is always the margin of safety but that would not be enough safety to avoid trouble in putting a color blind person on a dangerous job depending on color discrimination. These rough groups of the primary visual skills can at least be a first step forward in developing the truly scientific minimal visual standards. Dr. Terry speaks of Dr. Davidson goes to the root of the entire problem in indicating the lack of instruction that physicians have prior to practice and the lack of instruction in industrial ophthalmology in graduate schools.

## HUMAN INFECTION WITH VENEZUELAN EQUINE ENCEPHALOMYELITIS VIRUS

A REPORT ON LIGHT CASES OF INFECTION  
ACQUIRED IN THE LABORATORY

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AND  
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NEW YORK

The importance of the viruses of western<sup>1</sup> and of eastern equine encephalomyelitis<sup>2</sup> in the causation of human disease is now well established.

Meyer<sup>3</sup> shortly after the discovery of the western equine virus in 1930, described the occurrence of encephalitis in 3 persons who had cared for sick horses and he voiced the suspicion that human infections with this virus may occur.

In 1938 Klund and Blumstein,<sup>4</sup> investigating the occurrence of 6 human cases of encephalitis in Minnesota found neutralizing antibodies to the western virus in the blood serum in 1 of 3 cases tested, and in the same year Howitt<sup>5</sup> isolated the virus from the brain in a human case of encephalitis.

In 1941 the largest epidemic of encephalitis ever recorded occurred in and around North Dakota,<sup>6</sup> which alone had 1,080 cases with ninety-six deaths and the causative agent was shown to be the western equine virus.

An outbreak of human encephalitis, proved to be due to the eastern virus,<sup>7</sup> occurred in Massachusetts in

1938<sup>8</sup> and resulted in eight deaths among the 30 cases reported (Feemster<sup>9</sup> refers to 38 cases).

The third member of the trilogy of equine encephalomyelitis viruses, immunologically distinct from the other two, is the virus of Venezuelan equine encephalomyelitis.<sup>10</sup> This virus appears to have received very little attention from veterinary or medical investigators, and the available information is meager and limited in scope. As far as we are aware, no instances of human infection with this virus have been reported from Venezuela or contiguous areas.

While this manuscript was in preparation, the report of Casals, Curnen and Thomas<sup>11</sup> describing 2 cases of human infection, both mild and acquired in the laboratory, reached our hands. It is our purpose in the present communication to describe 8 human cases of laboratory infection with the Venezuelan virus in which the clinical course of the disease varied from a comparatively mild illness to a severe infection with manifestations of central nervous system involvement. All 8 cases were proved immunologically to be due to the Venezuelan virus, and in 6 the virus was recovered

### EPIDEMIOLOGY

During the course of investigations on the causation of encephalitis following vaccination against yellow fever<sup>12</sup> it became desirable to make comparative studies on certain neurotropic viruses, and for this purpose an isolation section was temporarily established in the Yellow Fever Research Laboratory. It is located on the second floor of the building to segregate it from the laboratories (third floor) devoted entirely to yellow fever investigations. The section is quartered in a single large room, one portion of which contains the usual basic laboratory apparatus and supplies and the rest provides space for mice. It began to function in September 1941, the original personnel consisting of two physicians E. H. L. and H. K., two technical assistants, G. D. and L. P. da S., and two animal caretakers and general utility men, C. P. O. and another person, A. F., who, at the time the laboratory infections reported here occurred was away on vacation, remained well and is therefore not considered further. J. D. B., technician, joined this group in September 1942, and J. S. R., animal caretaker, was added in January 1943.

To keep the foreign viruses within the confines of the isolation section, a number of precautions were taken. No employee other than the section's personnel was permitted to enter, under threat of immediate dismissal. All the viruses worked with were passaged, desiccated and stored in locked steel boxes in the section. No animal received in the section was permitted to leave alive, and all dead animals, cage refuse, floor sweepings and so on were collected in special receptacles. These containers with their contents were immersed in tanks of cresol solution for a minimum of one-half hour, but usually several hours, were withdrawn and allowed to drain, and the refuse was then incinerated. Mouse boxes were disinfected by similar

<sup>1</sup> From the Laboratory of the Yellow Fever Research Service, Rio de Janeiro, Brazil.

The work on which these observations are based was carried out under the auspices of the Serviço de Estudos e Pesquisas sobre a Febre Amarela (Yellow Fever Research Service) which is maintained jointly by the Ministry of Education and Health of Brazil and the International Health Division of the Rockefeller Foundation.

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<sup>5</sup> Klund, C. M., and Blumstein, Alex. The Relation of Human Encephalitis to Encephalomyelitis in Horses. *J. A. M. A.* **111**: 1734-1735 (Nov. 3) 1938.

<sup>6</sup> Howitt, Beatrice F. Recovery of the Virus of Equine Encephalomyelitis from the Brain of a Child. *Science* **88**: 455-456 (Nov. 11) 1938.

<sup>7</sup> Leike, J. P. Epidemic of Infectious Encephalitis, *Pub. Health Rep.* **58**: 1902-1905 (Sept. 26) 1941.

<sup>8</sup> Lothergill, I. D., Dingle, J. H., Farber, S., and Connerley, M. L. Human Encephalitis Caused by the Virus of the Eastern Variety of Equine Encephalomyelitis. *New England J. Med.* **219**: 411 (Sept. 22) 1938.

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<sup>11</sup> Feemster, R. F. Outbreak of Encephalitis in Man Due to the Eastern Virus of Equine Encephalomyelitis. *Am. J. Pub. Health* **28**: 1403-1410 (Dec.) 1938.

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<sup>13</sup> Casals, J., Curnen, E. C., and Thomas, L. Venezuelan Equine Encephalomyelitis in Man. *J. Exper. Med.* **77**: 521-530 (June) 1943.

<sup>14</sup> Fox, J. P., Lennette, E. H., Manso, C., and Souza Aguiar, J. R. Encephalitis in Man Following Vaccination with 17D Yellow Fever Virus. *Am. J. Hyg.* **36**: 117-142 (Sept.) 1942.



immersion and then scrubbed with soap and water. All glassware and instruments were boiled in covered enamelware containers, which, when cool, were doused liberally with cresol solution before delivery to the sterilization room. Tables and work benches were routinely washed with cresol solution at the beginning and end of each day's work and before and after use during the day. All manipulations of infectious material were done over cresol soaked towels spread on the table or bench.

During the past two years, ten different neurotropic viruses have been worked with at one time or another, and the precautions outlined appear to have been adequate.

On Aug. 18, 1942 a strain of the Venezuelan equine encephalomyelitis virus was received from Dr. Raymundo Cunha of the Instituto de Biologia Animal, Rio de Janeiro, who originally obtained it from Beck and Wyckoff.<sup>13</sup> The virus was immediately passaged, and up to June 26, 1943 it had been worked with on fifty-two separate occasions, chiefly passages to secure source material for experiments and for animal immunization. On June 26, 1943, the fifty-third occasion, 120 suckling mice were inoculated according to the technique used many times before, to serve as infected individuals in an experiment on contact infection. The noteworthy feature of this experiment, which distinguished it from all previous ones, lay in the unusually high frequency with which, for various reasons, the contaminated mouse boxes were handled. About 80 per cent of the inoculated animals died within 36 to 48 hours and the majority were partially eaten by the mothers. Since the virus is present in the brain in high concentration and persists in the blood up to the time of death there is every reason to believe that the wood shavings and dust in the boxes were heavily contaminated by the blood and carcasses of the partially devoured animals.

The mice in each box were inspected two or more times daily to transfer sick animals to other boxes, to detect signs of illness in noninoculated contacts and to remove dead animals. Because of the small size of the experimental mice, it was necessary to comb through the shavings with forceps to find them. Such agitation of the contents of the boxes raised a fine and, in sunlight, perceptible cloud of dust, to which the examiners were exposed for an appreciable period at least twice daily.

The first human infection appeared on June 30 in J. S. This person was a technician in the ornithology section, was well trained in the handling of yellow fever virus and had been permitted the facilities of the isolation section for inoculation of birds with the eastern equine encephalomyelitis virus. He had worked with the eastern equine virus on numerous occasions from Feb. 26, 1943 until June 26, 1943. On the latter date he handled for the first time a preparation of the Venezuelan virus and inoculated a number of birds. The nature of the experiment required him to spend several hours daily in the isolation section for the succeeding several days. He was therefore subjected for a considerable period of time to the same environmental conditions as the permanent staff of the isolation section, 2 persons who assisted him in the bird inoculations were exposed to the virus on that occasion, did not enter the section again and did not become ill.

The second case of illness appeared on July 1 and was followed by 3 more on July 2, the sixth appeared on July 5. Only 3 members of the section's personnel

escaped infection—A. F., who at the time of the experiment was on vacation, and H. K. and E. H. L., both of whom, owing to the press of other work, entered the section only intermittently and for relatively brief intervals.

The experiment was repeated on a larger scale on July 10, and this time both H. K. and E. H. L. examined the mice and effected the necessary switches of animals between boxes. H. K. became ill on July 13, E. H. L. on July 14.

The occurrence of the cases in two groups, each after an experiment of the type described, points to the presence in each experiment of a common source of infection. This source, for the reasons mentioned, is strongly suspected to have been the contaminated dust in the mouse boxes, and we are inclined to believe that the infections were acquired by the respiratory route.

Since Casals<sup>11</sup> and we have found the virus present in throat washings it is not impossible that infection can be transferred through the medium of infected droplets. In the present series G. D. (patient 6) may conceivably have acquired his infection in such a manner, since he became ill 72 to 120 hours after patients 1-5, in all of whom the disease had its onset within 48 to 96 hours after the first exposure to contaminated dust.

Patients 7 and 8 likewise became ill 36 to 48 hours after their first exposure in the second experiment. With a virus as infectious as the Venezuelan equine virus it appears reasonable that a short incubation period dating from the experiment, is more probable than a long one, which would have to be assumed if these persons acquired their infection from any of the first groups of patients, the possibility that the latter occurred, however, cannot be ruled out.

#### REPORT OF CASES

CASE 1—J. S., a white man aged 30, a technician as explained, was not permanently attached to the staff of the isolation section. About 3:30 p. m. on June 30, 1943 he began to feel cold and noted that his arms were covered with gooseflesh and that his face felt hot. Before leaving the laboratory at 4:30 p. m. he expressed the belief that he was coming down with an attack of grip because he then had a generalized body ache and a beginning frontal headache. During the evening the body pains increased in intensity and were stated to be especially severe over the shoulders, lumbar region and backs of the legs. The headache became almost unbearable. He felt continually nauseated and vomited several times during the night. Despite the use of several blankets he was unable to relieve his feeling of chilliness; he sweated profusely but did not shiver. No medication was taken.

He awoke on July 1, after having had little sleep, feeling much worse than on the preceding day. He states that the muscle pains were so severe and the malaise so pronounced that every movement was made only with considerable effort. The headache persisted in undiminished intensity. No symptoms of respiratory infection were present. He reported for duty as usual but, because he appeared quite ill, was sent home and urged to consult a physician. He went to bed and acetylsalicylic acid and acetophenetidin 0.5 Gm. of each every four hours were prescribed by his physician. Because of his fever and thirst he drank large amounts of fruit juices and water despite the nausea, which left him without desire for other foods. In the late afternoon although still weak he felt somewhat improved, chiefly because the muscle pains had decreased considerably and his headache had diminished slightly. The nausea continued however and during the night he vomited two or three times. Profuse night sweats were again present and he spent a restless night.

July 2 the patient continued with his medication and on the whole felt much better. However, his neck and shoulders were sore and he moved his head as infrequently as possible because

<sup>13</sup> Beck, C. E. and Wyckoff, H. W. G. *Venezuelan Equine Encephalomyelitis*. Science 88: 530 (Dec. 2) 1938.

of the exacerbation of the headache such movements produced. The muscular pains were almost gone, and the nausea had disappeared. He still felt weak and had no desire for food. He believes he also had some elevation in temperature because his face and body felt extremely hot, and he was unable to satisfy his thirst. No symptoms of respiratory infection were present.

On July 3 he reported for duty, stating that aside from feeling weak he felt much improved and capable of working the half day (Saturday). It was observed that he held his head rigidly and avoided lateral movements, on questioning he denied the presence of rigidity and explained the position as one of "determ. to prevent exacerbations of the headache induced by the smallest movements" (*defesa para não exacerbir a cefaleia que se torna acusada aos menores movimentos*). This was regarded with suspicion, but, since he stated that he felt so much improved that he had stopped medication and appeared cheerful and mentally alert, he was permitted to work. During the next three days he continued to hold his head somewhat stiffly. The headache persisted, but in mild, bearable form. His strength returned rapidly, he became fatigued less quickly, and on July 7 he felt that he had recovered, since the headache was gone and he moved his head freely. By July 9 his strength and appetite were back to normal.

CASE 2—C P O, a white man aged 34, an animal caretaker and general utility man, began to be ill at 6 p. m. on July 1, 1943, when he had a sudden violent chill. Attacks of shivering and chattering of the teeth, lasting about one minute, occurred at five to ten minute intervals for the next hour. Shortly after 7 p. m. he took one tablet (0.325 Gm.) of acetylsalicylic acid and about 100 cc. of a hot infusion of garlic and went to bed but could not sleep. Between 9 and 10 p. m. a severe headache, localized between the eyes, set in, and he began to complain of photophobia. He felt hot, perspired freely and was unable to sleep most of the night because of the headache. About 4 or 5 a. m. he began to complain of generalized muscle aches and pains, especially severe in the lower part of the legs.

July 2 he awoke late in the morning with a strong photophobia, intense body aches and an almost unbearable headache. He felt so tired and weak that he remained in bed the whole day, but because of the headache he was able to sleep only intermittently and for short intervals. He felt hot but did not perspire, nor was the fluid intake any greater than normal. No food was taken during the day. Nausea was absent. He states that no symptoms of respiratory infection were present.

He awoke on July 3, after sleeping fitfully during the night, to find that the photophobia had disappeared and that the headache and body aches had diminished appreciably, pain in the calf muscles was still strong, however, so that he walked as little as possible and avoided climbing stairs. He went to the laboratory but, because of asthma and leg pains, performed all his routine tasks, as far as feasible, while seated. Toward the middle of the afternoon the muscle pains and the headache diminished in intensity and he felt much better. He was without appetite and ate nothing the entire day. He slept well the whole night.

On July 4 he awoke completely free from his headache. Slight pains in the calf muscles were still present, but very mild, and during the afternoon practically disappeared. He still felt weak and had no appetite, although he felt hungry. He slept soundly that night. On July 5 he felt much improved and had no complaints except that he still felt weak and tired easily. He ate well for the first time since the onset of illness. During the next few days the asthma disappeared and he was able to work as usual.

CASE 3—J S R, a Negro aged 28, an animal caretaker and general utility man, was well until about 10 a. m. on July 2, 1943, when he suddenly felt cold and dizzy. Shortly thereafter he developed a frontal headache, which by 2 p. m. was so severe that he was barely able to continue with his work. His temperature at noon was 100.4 F, at 2 p. m. 101.4 F. With the appearance of the headache he began to feel dizzy at frequent intervals. By 4:30 p. m. his headache was so severe that in order to escape sudden exacerbations in its intensity, produced by sudden movements or jarring of the body, he walked slowly and carefully. His temperature at this time was 102.2 F.

He arrived home at 5 p. m. and complained that his head felt so heavy that it seemed ready to fall off his body and that his legs were so weak he could hardly stand. He felt cold and shivered, although his body was hot. Food was refused and he went to bed at 6:30 p. m. after taking two tablets of *veganin* (each tablet contains codeine phosphate 0.01 Gm., acetylsalicylic acid 0.25 Gm. and acetophenetidin 0.25 Gm.) He slept poorly and was troubled with a profuse night sweat.

He awoke on July 3 feeling about the same as on the preceding day and remained at home. *Veganin* medication was continued, two tablets being taken every four hours. He felt weak, the headache continued with unabated severity, and sudden movements of the head produced vertigo and a slight nausea. Despite a distaste for food, he forced himself to eat. Muscle aches and pains were absent and there were no symptoms of upper respiratory tract infection. He slept well during the night, perspiring, but not as much as on the previous night. The chilly sensations had disappeared.

During the next three days the night sweats and the headache (still frontal) diminished and on July 7, when he returned to the laboratory, had disappeared. His appetite improved and his strength returned gradually, and by July 12 he felt that he was back to normal.

CASE 4—J D B, a white man aged 34, a laboratory technician, awoke on July 2, 1943 with a frontal headache and pains in the calf muscles of both legs but did not feel too sick to work all day in the laboratory. No other symptoms were present. He slept well and on July 3 went to the laboratory as usual and worked until noon (Saturday). The headache and leg pains were still present and still as strong as on the preceding day. Toward noon his shoulders and back began to ache, and he felt so weak that he went to bed as soon as he arrived home. He had no appetite and ate practically nothing all day. His condition remained essentially the same on July 4, when he again worked half the day (Sunday). On July 5 the muscle pains were gone and only a mild headache was present. The anorexia persisted. He worked all day and felt much improved. On July 6 his headache disappeared, his appetite returned and, aside from the asthma, he had no complaints.

CASE 5—L P da S, a white man aged 29, a laboratory technician, about 2 p. m. on July 2, 1943 began to feel tired and complained of aches in the back and the legs, he attributed this to the fact that he had worked rapidly and intensively all the morning without pause. Later in the afternoon he developed a bothersome frontal headache, malaise and a generalized body ache. He left the laboratory at the usual hour, 4:30 p. m., and in the belief that he was in the initial stages of grip he stopped at a drugstore, where he received an intramuscular injection of one ampule each of "Gripion" (quinine chlorhydrate, urethane, sodium nucleinate and cacodylates of sodium, strychnine and guaiacol) and of vitamin C. On arrival at home he took a cup of tea and one tablet of "Melhoral" (butanoic-o-oxbenzoic acid 0.5 Gm. and caffeine 0.05 Gm.) and went to bed. His face was hot and flushed, and his whole body felt warm. The headache had now become severe and he complained of photophobia and of pain behind the eyeballs. He was restless and slept little all night.

On July 3 he was so weak that it was with great difficulty that he got out of bed and dressed himself. The headache and muscle pains of the lower back and legs persisted in undiminished intensity. No symptoms of upper respiratory tract infection were present. The feverish feeling was now replaced by a continuous sensation of cold. He reported at the laboratory at the usual hour, but his general appearance, especially the ashen color of his face, was so alarming that he was immediately sent home. He was urged to call in a physician but did not do so. On arrival home he took a cup of tea and a piece of bread, the only food taken all day. In the late afternoon his headache ameliorated somewhat, but the muscle pains continued with unabated severity. He slept well that night and the next day, July 4, he found the headache and muscle pains gone. He was so weak that he remained in bed all day and ate but little.

On July 5 he felt much better and was able to work all day. He was pale and weak and had little desire for food. By July 8 he considered himself to be as well as before his recent illness.

On July 21 he awoke feeling well physically but with a vague sense of uneasiness and apprehension. He ate his usual breakfast and went to the laboratory. About 10 a. m. he began to feel cold, and within half an hour severe aches appeared in the legs, back and shoulders. His head felt heavy, he was sleepy, and at noon the headache, which for the past three days had been minimal, returned in its full exerting intensity and again was localized between the eyes. Nausea and vertigo appeared with the headache and he was unable to eat his lunch. By 2 p. m. he was so ill that he was taken home. His temperature was 103.5 F. His face had an ashen gray pallor, and he had a persistent sensation of chilliness, especially in the hands and feet even when covered with blankets. He complained of a pounding heart, slightly labored breathing and photophobia. He was irritable, responded to questions brusquely, refused to tolerate any one in his room and demanded to be left in peace. After his room was darkened he almost immediately went to sleep and remained in a somnolent state all that day. At 7 p. m. he vomited a large amount of bile stained mucus and again went to sleep. He slept almost continuously day and night for five days but was easily aroused when spoken to or by unusual outside noises. During the course of conversations he remained awake for whatever length of time was required and then went back to sleep. At no time was there any evidence of mental confusion, he himself was aware of his somnolent state and even observed that his breathing seemed irregular and that he sighed frequently. When awake he usually complained most bitterly of his headache and of prims in his back and legs. During the five days of somnolence his temperature ranged from 101.5 to 103 F. and he subsisted only on tea and toast; the sight or smell of any other food induced nausea.

On July 26, twelve days after the onset of the first symptoms and after five days of somnolence he awoke cheerful, alert and exultant that his headache was gone. The muscle prims were also gone and except for a soreness in the shoulders and back he felt comfortable and ate a hearty breakfast. His temperature was 99.8 F. A weight loss of 5 Kg. had occurred during the twelve days of illness.

On July 27 he resumed his work at the laboratory and was able to work all day although he became so fatigued that he had to rest frequently. In the course of the next week his strength and appetite gradually returned. As in case 7 insomnia and a fine intention tremor are present as sequelae but are gradually disappearing.

#### ISOLATION OF A FILTRABLE AGENT FROM SIX PATIENTS

The entire personnel of the isolation section had been bled on July 3 at the time the first infections occurred, and the serums were stored in the refrigerator.

When patient 7 became ill he was bled on July 14 the second day of illness, and his serum as well as the July 3 serum specimens from patients 1, 2, 4, 5 and 6 were inoculated into mice. Patient 8 was bled on July 15 and the serum was injected into mice the same day.

Each serum was injected intracerebrally in 0.03 cc amounts into 12 albino Swiss mice of 21 to 23 days of age. None of the mice inoculated with serum from patient 6 showed any detectable signs of illness during a 14 day observation period and were discarded, since this serum was taken 2 days before the onset of symptoms, demonstrable circulating virus probably was not present in his blood. This finds some support in the fact that the serum of patient 8 taken on the second day of illness, contained so little virus that only 1 mouse behaved suspiciously 72 hours after inoculation, this mouse was killed, and the virus was recovered from its brain by passage. The remaining 11 mice showed no visible evidence of illness during a 21 day observation period. The majority of the mice inoculated with serum from patients 1, 2, 4, 5 and 7, however, were found dead or dying 48 hours after inoculation.

The sick mice were killed and their brains were removed, weighed and made into a 10 per cent suspension in nutrient broth containing 10 per cent of normal sheep serum. The supernatants obtained after centrifugation for 15 minutes at 1500 revolutions per minute in an international electric centrifuge equipped with an angle head were drawn off and inoculated intracerebrally in 0.03 cc amounts into groups of 12 mice. Bacteriologic cultures made by inoculating 1.0 cc amounts of the supernatants into tubes of broth and deep agar (Veillon's medium) and streaking blood agar plates were sterile at the end of seven days. Mice sick at the second passage were killed and the brains were removed and made into a 20 per cent suspension in 10 per cent normal sheep serum broth and centrifuged as before. The supernatants were ampuled in 0.5 cc amounts and desiccated from the frozen state over sulfuric acid.<sup>14</sup>

A throat washing in nutrient broth was collected from patient 7 on the second day of illness and was immediately inoculated intranasally in 0.05 cc amounts into 12 mice. Four days after inoculation all the animals were excitable and appeared sick. Four of the mice were killed. The lungs were examined and found to be normal on gross inspection. The brains were therefore removed and made into a 20 per cent suspension in serum broth and the supernatant obtained after centrifugation was desiccated as before. The next day 6 mice were found dead; on examination the lungs of these and of the remaining 2 sick animals showed no consolidation or abscesses.

As bacteriologic cultures made of the seven infections agents were consistently negative, these agents were considered to be viruses; most probably one of those worked with in the laboratory. To narrow down the field of possible offenders so that final identification could be accomplished with an economy of time, labor and money, two approaches viz. filtrability of the agents and their pathogenicity in animals, were used. Depending on whether the infectivity of the filtrates was abolished, reduced or unaffected as compared with unfiltered preparations certain of the viruses in the laboratory could be excluded from consideration. In addition, the pathogenic activity of the virus in guinea pigs and/or rabbits, or its failure to infect either, would permit definitive exclusion of certain viruses.

One ampule of each of the seven strains was rehydrated with broth and the contents were inoculated intracerebrally into mice. The next day when signs of illness were present in most of the animals the brains were removed, made to a  $10^{-10}$  suspension in sheep serum broth and centrifuged as described. The supernatants were drawn off, diluted to  $10^{-20}$  with serum broth, and a 20 cc aliquot was filtered through a Seitz EK pad previously prepared by passing 20 cc of serum broth through it.

Serial tenfold dilutions of each of the seven filtrates were made and inoculated intracerebrally in 0.03 cc amounts into mice, four for each dilution. The hundredfold dilutions of the filtrates ( $10^{-40}$  dilution of the original brains) were inoculated into pairs of guinea pigs and rabbits, one of the pair receiving the inoculum by the cerebral route, the other by the intraperitoneal route, 0.2 cc was injected intracerebrally into both guinea pigs and rabbits, and 0.5 and 1.0 cc were injected intraperitoneally into guinea pigs and rabbits respectively.

<sup>14</sup> Lennette, E. H., and Cox, J. P. Anticorpos neutralizantes para a amostra teste do virus de encefalomyelite equina em equideos no Brasil. Mem. Inst. Oswaldo Cruz 38: 85-92 (Feb.) 1943.

The 50 per cent mouse mortality end point titer<sup>15</sup> of the seven filtrates varied from  $10^{-8.5}$  to  $10^{-9}$  (based on the dilution of the original brain). These titers practically identical with those obtained with crude suspensions of infected mouse brain, indicate that the infectious agents passed the filters without significant loss of infectivity; the ability to pass through an EK filter pad suggests a very small particle size. Aerobic and anaerobic cultures of the filtrates failed to show any bacterial growth during 10 days' incubation.

On the basis of the 50 per cent intracerebral mouse mortality end point titer of the filtrates and the volume injected guinea pigs and rabbits received from 195,000 to 1,950,000 mouse minimum lethal doses intracerebrally, intraperitoneally, guinea pigs received from 487,500 to 4,875,000 mouse minimal lethal doses and rabbits received from 975,000 to 9,750,000 mouse minimal lethal doses. Following intracerebral inoculation fever appeared in 12 to 24 hours and was followed by weakness, tremors, paralysis and death, guinea pigs died in from 48 to 108 hours and rabbits in from 60 to 132 hours, the averages being 80 and 93 hours respectively. The onset, development and progression of the disease were essentially alike in the two animals. The course of infection after intraperitoneal inoculation was similar to that seen after intracerebral inoculation except that physical evidence of infection was slower in appearing and the time to death was longer, guinea pigs died in from 84 to 240 hours and rabbits in from 60 to 204 hours, the respective averages being 132 and 138 hours.

The chart presents the pertinent data on the course of the infection in guinea pigs inoculated with the viruses recovered from patients 4 and 7, the results are highly typical of those in the other test pigs and, except for the time factor, closely resemble those obtained in rabbits.

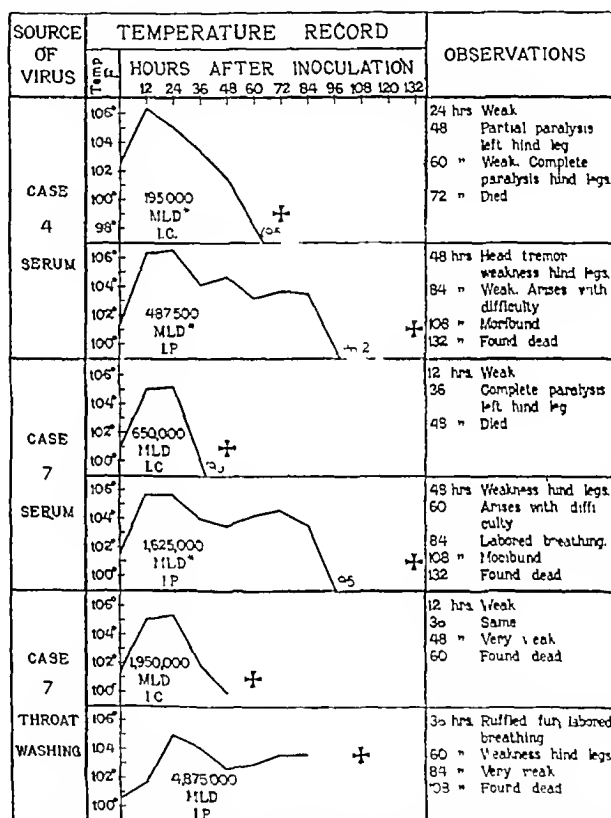
The rapidity with which these infectious agents, even in very high dilution, killed mice, and their high infectivity for guinea pigs and rabbits strongly suggested that we were dealing with a member of the equine encephalomyelitis group, because of the remarkable pathogenicity for rabbits, the Venezuelan virus was considered to be the most probable of the three.<sup>16</sup>

#### IDENTIFICATION OF THE INFECTIOUS AGENTS AS VENEZUELAN EQUINE ENCEPHALOMYELITIS VIRUS

Based on the presumptive evidence that the infectious agents recovered from 6 patients were identical with the Venezuelan equine virus, neutralization tests were done with known Venezuelan equine encephalomyelitis rabbit immune serum and the seven viruses.

Infectious mouse brain desiccates of each virus were rehydrated and passed intracerebrally into mice. Forty-

eight hours later sick mice were killed and the brains were removed, cultured and stored overnight in the freezing compartment of the refrigerator. The following day five bacteriologically sterile brains of each virus lot were weighed ground to a 20 per cent suspension in 10 per cent normal sheep serum broth and centrifuged at 1,500 revolutions per minute for 15 minutes in an international electric centrifuge equipped with an angle head. A series of falling tenfold dilutions was made from the supernatant by serial transfer of 0.5 cc amounts into 4.5 cc of serum broth. To 0.2 cc of undiluted rabbit serum normal or immune, was added 0.2 cc of the desired virus dilution; the tubes were well shaken and the contents were inoculated into mice at once, each mixture was injected subcutaneously in 0.03 cc amounts into a group of 6 mice 3 days of



Pathogenicity for guinea pigs of filtrable agents isolated from patients 4 and 7. + minimum lethal doses expressed as total number of 50 per cent intracerebral mouse mortality doses contained in the volume of inoculum administered.

age<sup>17</sup>. Table 1 shows the results of the test. The mortality ratios are given to show the number of mice which died or survived following inoculation of any serum-virus mixture and to furnish the data on which the 50 per cent mouse mortality end point titer of the viruses in the presence of normal and of immune serum was computed. The degree to which the immune serum was able to neutralize a virus is shown under the heading "effective virus titer" by the differences in the logarithms for the lethal dilution end points of the virus in the presence of normal and of immune serum; the logarithmic differences in titer are expressed arithmetically in the last column as the number of 50 per cent mouse mortality doses of virus neutralized. It

15. Reed L. J. and Muench H. A Simple Method of Estimating 50 Per Cent End Points. *Am J Hyg* 27: 493-497 (May) 1936.

16. Webster and Wright consider the rabbit unless massive doses are used to be much less susceptible ( $\pm$ ) than the guinea pig (+) to the eastern virus while Mitchell and Walker (Canad J Comp Med 5: 314 [Nov.] 1941) report rabbits refractory to intracerebral inoculation of the western virus. Kubers and Rios<sup>18</sup> found that rabbits were very susceptible to the Venezuelan virus and succumbed in from 72 to 96 hours after intracerebral inoculation. Lépine, Mathis and Santter (Bull Soc path exot 34: 115 [May-July] 1941) have also remarked on the high virulence of this virus for rabbits. Our routine procedure for immunization of rabbits against the eastern and western equine encephalomyelitis viruses is to administer intraperitoneally the whole of an uncentrifuged suspension consisting of one or two infectious mouse brains ground up in 10 cc of isotonic solution of sodium chloride; the large majority of animals resist this dose of virus. With the Venezuelan virus, however, death of the animal is produced by intraperitoneal inoculation of 5 cc of centrifuged virus supernatants diluted to  $10^{-8.5}$  while smaller doses fail to immunize or produce a very poor immune response. We have succeeded in immunizing only 2 of 20 rabbits with living virus and now routinely use virus inactivated with 1 per cent formal.

17. The rationale and technique of this test will be presented in a forthcoming paper.

will be observed that from 79,000 to over 50,000,000 minimum lethal doses of virus, depending on the strain, were neutralized.

Since the Venezuelan equine virus rabbit immune serum had been previously tested by an identical technique and proved devoid of demonstrable neutralizing antibodies for the eastern and western viruses, its high

All 8 patients were bled on July 31 to obtain a convalescent phase serum specimen, the interval from onset of symptoms to bleeding, therefore, ranged from 17 to 31 days. In those cases in which virus had been isolated from the acute phase blood specimen, recourse was had to a preinfection serum specimen taken from 2 to 13 days before onset of the illness.

TABLE 1—Results of Neutralization Tests with Venezuelan Equine Encephalomyelitis Rabbit Immune Serum and Viruses Recovered from Six Patients

Virus Strain Tested		Type of Rabbit Serum * Used	Mortality Ratio † in Three Day Old Mice Inoculated Subcutaneously with Serum Plus Virus Diluted										Effective Virus Titer	Number of 50% Mouse Mortality Doses of Virus Neutralized
Origin	Source		10 <sup>-1</sup>	10 <sup>-2</sup>	10 <sup>-3</sup>	10 <sup>-4</sup>	10 <sup>-5</sup>	10 <sup>-6</sup>	10 <sup>-7</sup>	10 <sup>-8</sup>	10 <sup>-9</sup>	10 <sup>-10</sup>		
Case 1	Serum	Normal V I L Immune	0/6	0/6	2/6	0/6	6/6 0/6	6/6 0/6	6/6 0/6	6/6	3/6	0/6	10 <sup>-2.0</sup> 10 <sup>-2.8</sup>	1,000,000
Case 2	Serum	Normal V F F Immune	6/6	6/6	0/6	0/6	6/6 6/4	6/6 0/6	6/6 6/6	6/6	1/6	0/6	10 <sup>-2.6</sup> 10 <sup>-2.2</sup>	1,000,000
Case 4	Serum	Normal V E L Immune	6/6	4/6	4/6	4/6	6/6 0/6	6/6 6/6	6/6 0/6	6/6	0/6	0/6	10 <sup>-2.5</sup> 10 <sup>-3.0</sup>	79,430
Case 5	Serum	Normal V I L Immune	6/6	2/6	6/6	0/6	6/6 0/6	6/6 6/6	6/6 0/6	6/6	4/4	6/6	10 <sup>-2.5</sup> 10 <sup>-1.8</sup>	50,120,000
Case 7	Serum	Normal V I L Immune	6/6	5/6	1/6	4/6	6/6 0/5	6/6 0/6	6/6 0/6	6/6	4/6	0/6	10 <sup>-2.2</sup> 10 <sup>-2.4</sup>	794,900
Case 7	Throat washing	Normal V F F Immune	6/6	6/6	4/6	2/6	6/6 0/6	6/6 0/6	6/6 0/6	6/6	4/4	6/6	10 <sup>-10.5</sup> 10 <sup>-2.5</sup>	or > 10,000,000
Case 8	Serum	Normal V F F Immune	6/6	6/6	2/6	1/6	6/6 6/6	6/6 0/6	6/6 0/6	6/6	6/6	6/6	10 <sup>-10.0</sup> 10 <sup>-2.0</sup>	or > 20,510,000

\* The normal and the immune serums were obtained from the same rabbit prior to and after immunization with Venezuelan equine encephalomyelitis virus. Both were tested and proved free from antibodies to the eastern and western equine encephalomyelitis viruses.

† The mortality ratio is expressed by a fraction in which the numerator indicates the number of mice which died and the denominator the number of mice which were inoculated (less those destroyed by the mother of the litter).

‡ The majority of the deaths in these dilutions were suspected to be nonspecific; however, since the animals died within the usual interval the deaths are considered as due to specific infection. It is possible, therefore, that the neutralizing potency of this serum is much greater than indicated.

TABLE 2—Results of Neutralization Tests with Venezuelan Equine Encephalomyelitis Virus and Serums Obtained from Eight Patients Before and After Illness

Serum Specimen			Mortality Ratio * in Three Day Old Mice Inoculated Subcutaneously with Serum Plus Virus Diluted										Effective Virus Titer	Number of 50% Mouse Mortality Doses of Virus Neutralized
Origin	Day Obtained		10 <sup>-1</sup>	10 <sup>-2</sup>	10 <sup>-3</sup>	10 <sup>-4</sup>	10 <sup>-5</sup>	10 <sup>-6</sup>	10 <sup>-7</sup>	10 <sup>-8</sup>	10 <sup>-9</sup>	10 <sup>-10</sup>		
Case 1	Preinfection Postinfection	11 days 31 days	6/6	0/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	3/6	0/6	10 <sup>-2.0</sup> 10 <sup>-1.1</sup>	31,600,000
Case 2	Preinfection Postinfection	12 days 30 days	6/6	2/6	0/6	6/6	6/6	6/6 0/6	6/6 0/6	6/6	6/6	0/6	10 <sup>-2.5</sup> 10 <sup>-1.8</sup>	50,120,000
Case 3	Preinfection Postinfection	13 days 29 days	6/6	2/6	2/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	3/6	1/6	10 <sup>-2.2</sup> 10 <sup>-2.0</sup>	15,630,000
Case 4	Preinfection Postinfection	13 days 29 days	6/6	6/6	0/6	0/6	0/6	6/6 6/6	6/6 0/6	6/6	6/6	6/4	10 <sup>-2.5</sup> 10 <sup>-1.5</sup>	100,000,000
Case 5	Preinfection Postinfection	13 days 29 days	6/6	6/6	1/6	0/6	6/6	6/6 0/6	6/6 0/6	6/6	6/6	0/6	10 <sup>-2.5</sup> 10 <sup>-2.6</sup>	7,943,000
Case 6	Preinfection Postinfection	2 days 26 days	6/6	2/6	0/6	0/6	0/6	6/6 6/6	6/6 6/6	6/6	6/6	1/6	10 <sup>-2.6</sup> 10 <sup>-1.8</sup>	63,100,000
Case 7	Preinfection Postinfection	10 days 18 days	5/6	1/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	6/6	0/6	10 <sup>-2.5</sup> 10 <sup>-1.5</sup>	100,000,000
Case 8	Preinfection Postinfection	11 days 17 days	6/6	0/6	0/6	0/6	0/6	6/6 0/6	6/6 0/6	6/6	4/6	1/6	10 <sup>-2.4</sup> 10 <sup>-1.2</sup>	79,430,000

\* The mortality ratio is expressed by a fraction in which the numerator indicates the number of mice which died and the denominator the number of mice which were inoculated (less those destroyed by the mother of the litter).

neutralizing capacity for the seven human viruses was regarded as specific, and these were therefore considered to be identical with the Venezuelan virus.

#### DEVELOPMENT IN PATIENTS OF NEUTRALIZING ANTIBODIES AGAINST THE VENEZUELAN EQUINE ENCEPHALOMYELITIS VIRUS

In addition to the isolation from 6 of the patients of a virus identified as that of the Venezuelan type, further proof that the illnesses were caused by this virus was adduced by demonstrating that neutralizing antibodies for this virus appeared in the blood during convalescence.

A 20 per cent suspension in serum broth was made of 5 brains freshly removed from mice infected with known Venezuelan equine encephalomyelitis virus. This suspension was centrifuged and serial dilutions of the supernatant were made and mixed with undiluted serum and inoculated subcutaneously into 3 day old mice, the entire procedure following that described in the preceding section.

The results of the test are shown in table 2. It will be observed that the titer of the virus in the presence of serum taken prior to illness ranged from 10<sup>-2.0</sup> to 10<sup>-2.6</sup>, which is the usual titration end point of the virus in menstruums devoid of neutralizing or inactivat-



ing capacities. In the presence of the convalescent serums however, the titer of the virus was definitely reduced, as can be seen from the mortality ratios and from the logarithm of the virus dilution calculated to represent the titration end point. The difference between the titration end points represents the amount of virus neutralized, expressed in terms of minimum lethal dose in the last column of the table. In every case more than 99.99 per cent of the infectious activity of the virus was neutralized, as can readily be seen from the mortality ratios obtained for each pair of serums.

The appearance during convalescence of neutralizing antibodies in such high concentration that they were capable of inactivating from approximately 8,000,000 to 100,000,000 minimum lethal doses of the Venezuelan equine encephalomyelitis virus, coupled with the fact that in 6 patients the specific virus was recovered during illness, leaves no doubt that the human infections were due to this agent.

#### COMMENT

A striking feature of the cases reported here was the abruptness with which symptoms appeared and the rapidity with which they attained the peak of their severity. Except for the unusually severe headaches there was nothing characteristic about the symptoms, and most of the patients believed that they had an attack of grip or influenza, but cough, coryza, lacrimation, pharyngitis (except in case 8), laryngitis or other evidence of respiratory infection did not appear.

Common to all the cases was fever (subjective or objective), severe body aches and pains especially intense in the calf muscles of the legs and an almost unbearable persistent headache, unrelieved by the usual drugs and unanimously described as the worst in the patient's experience. Of 6 of the 8 patients the headache was frontal from its onset and remained thus localized throughout the course of the illness.

Compared with the 2 cases reported by Casals and his associates,<sup>11</sup> the course of the disease in all these patients was considerably more severe, even though definite differences in the severity of illness were present between the mildest and the severest cases. Cases 2 and 4 were the least severe, 3 and 6 next, and in 1, 5, 7 and 8 the illness was so severe as to give cause for alarm. All the patients were drowsy to a variable degree, but, owing to the inability of most of them to sleep because of the intense headache, its significance is difficult to assess. True somnolence appeared only in case 8. In cases 7 and 8 there was a period of remission with definite amelioration of the symptoms.

As shown in this communication and by Casals the ability of the Venezuelan equine encephalomyelitis virus to infect man is beyond question. The apparent absence in Venezuela of human infections, frank or inapparent, is therefore puzzling, especially since encephalomyelitis has been prevalent in horses since at least 1936.<sup>18</sup> Because of the lack of information on the extent to which the Venezuelan and eastern equine viruses are disseminated among the human population residing in areas where these viruses are enzootic a comparison of the relative infectivity and virulence for man of the three equine viruses is impossible. It may be worth noting, however, that no fatalities occurred among the 10 cases of laboratory infection produced by the Vene-

zuelan virus, which is the most virulent for laboratory animals of the three equine encephalomyelitis viruses, while the western virus, the least virulent for laboratory animals, has caused two deaths among the 4 cases of laboratory infection recorded,<sup>10</sup> and the eastern virus has produced one nonfatal laboratory infection.<sup>20</sup>

There is an impressive body of epidemiologic evidence to show that the western equine virus is arthropod borne, and potential mosquito vectors have been reported for both the eastern<sup>21</sup> and the Venezuelan<sup>22</sup> equine viruses. According to the classification of encephalitides recently proposed by Hammon, Reeves and Gray<sup>23</sup> the encephalitides due to these agents, and in addition St. Louis encephalitis (mosquito borne), Japanese B encephalitis (mosquito borne), Russian fall-winter encephalitis (mosquito borne) and Russian spring-summer encephalitis (tick borne) would be classified as the "arthropod borne virus encephalitides." This would serve to distinguish these encephalitides from those of the postvaccinal, postinfection and von Economo types and those due to rabies, trypanosomiasis and other conditions.

If, as is inescapable, it is admitted that the available evidence favors arthropod transmission of the equine viruses to the almost complete exclusion of transmission by contaminated food or water or by contact, it must be equally admitted that the abundance of evidence for the former means of transmission and its paucity for the latter are almost directly commensurate with the attention each has received. The western equine virus has been isolated from the nasal washings of horses<sup>24</sup> inoculated intracerebrally and from nasal washings of guinea pigs<sup>25</sup> inoculated intramuscularly, but according to Hammon and his associates<sup>28</sup> limited attempts to isolate the virus from nasal and throat washings, urine and feces of naturally infected human beings and horses have been unsuccessful. Against these negative results is the facility with which Casals and his associates<sup>11</sup> and we recovered the Venezuelan virus from the throat washings on the first and only attempt, so that of the 10 human cases of infection with this virus reported up to the present the specific virus has been recovered from the nasopharynx in 2. There is, therefore, every reason to believe that transmission by contact is possible, future investigations will have to assess the relative importance of the part such transmission plays in the epidemiology of human infections provoked by the equine encephalomyelitis viruses.

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TRACHEOTOMY IN BULBAR  
POLIOMYELITIS

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Most clinicians appear to doubt that tracheotomy could be useful in bulbar poliomyelitis, although Wilson<sup>1</sup> has stated that "in very carefully studied instances tracheotomy may save life." The results with 3 patients seen in the past two months have convinced me that the operation may be a very important procedure in this disease. Two were undoubtedly saved by it and the third might have been had intervention been done ten minutes earlier.

The first of these illustrates most of the points to be raised and most of the difficulties encountered.

CASE 1—A white man aged 36 had been admitted on Aug. 26, 1943 to the Evanston Hospital with a history of fever and malaise for four days, dizziness and stiffness of the neck for two days and difficulty in swallowing for one and one-half days. Spinal puncture with findings of 70 cells per cubic centimeter made the diagnosis apparently definitely bulbar poliomyelitis. He constantly spit up foamy saliva but did fairly well for four days. Then when a feeding tube could not be easily passed he was permitted to take some gelatin and fruit juice. This he gulped then gapsed, became incoherent and disoriented and had great difficulty in breathing.

Two hours later when I saw him he was semicomatose, cyanotic and breathing spasmodically with an interrupted shallow diaphragmatic respiration. He was in the postural drainage position, the tongue had been forcibly pulled forward, and much fairly thin secretion was being aspirated. A Hagg laryngoscope was introduced with difficulty, apparently caused in part by spasm and the pharyngeal tissues and tongue were seen to crowd together. The larynx was observed to be open, and a pool of secretion found its gravity level in the larynx and trachea so that unless kept completely aspirated, inspired air had to be drawn through it. With the tongue held forward first with a laryngoscope and later with a rubber airway and with constant aspiration the patient improved for a time. After about one hour respiration nearly ceased and he became completely unconscious.

A rapid median tracheotomy was done, cutting through a large congested thyroid isthmus. Breathing stopped at this stage for about three minutes. After aspiration by catheter through the tracheotomy wound and with manual artificial respiration shallow intermittent breathing occurred hardly faster than the automatic rate but was not kept up without manual aid. The patient was then put in a Drinker-Collins respirator. The sponge-rubber collar was held distal to the tracheotomy tube by a black iron bar  $\frac{3}{4}$  inch wide and  $\frac{1}{8}$  inch thick bent 4 inches from the end at an angle of 40 degrees and fixed in place under the fringe which held the collar. This was satisfactory except that removal of the inner tracheal cannula was difficult.

At 1 p.m. the patient was put in the respirator, at 1:30 the color was good and the pulse improved, at 1:45 he was conscious. The respirator was stopped at 3 a.m. for ten minutes at the patient's demand, and diaphragmatic respiration was of fair quality at first but quickly became irregular, and restlessness and cyanosis recurred. The respirator was then started and the patient rested and slept.

Secretion was profuse for several days, filling up to the lips and anterior nares, and was constantly aspirated through the tracheotomy tube, although the angle of postural drainage was maintained at 35 degrees. Fluid and electrolyte balance were maintained intravenously. Sixty thousand units of penicillin was given in thirty-six hours with no lowering of the temperature from 102 to 103 F. Thereafter a sulfadiazine level of

4 to 6 mg. per hundred cubic centimeters was maintained for one week. After four days feeding was by Levine tube, with the head raised and the respirator flat for one-half hour after feeding, followed alternately by three and one-half hours of postural drainage.

Four days after being put in the respirator the patient was left out for several hours. He became incoherent and cyanotic, and the pulse was poor. After some time again in the respirator, the patient rested and slept and awoke rational. Improvement was steady thereafter. Only gradually was the interval out of the respirator lengthened, and the patient was put back at the first sign of fatigue. After the eleventh day he was not returned to the respirator. Fourteen days after admission the patient felt much better, and on the sixteenth day he was allowed to eat breakfast, although a small piece of egg came out of the tube. Twenty-one days after operation the tracheotomy tube was corked, and two days later the tube was removed. One month after admission the patient left the hospital. His costal and diaphragmatic respiration seemed normal. He swallowed with little difficulty if he ate slowly. There was some residual paresis of the right shoulder and upper arm for which Kenny treatment was continuing.

CASE 2—A white girl aged 12 years was seen on the third day of her bulbar poliomyelitis. She was cyanotic and restless, had a gurgling, shallow rapid respiration and was very apprehensive and uncooperative. She resisted gentle efforts at aspiration although after this was done she improved for a few hours. When seen seven hours later she was unconscious, cyanotic and breathing out of rhythm and with great difficulty.

A rapid tracheotomy was done through the second and third tracheal rings and much thick mucus was aspirated. The patient improved slowly the first few hours but slept well after twelve hours. In twelve hours more respirations had become deep and fairly regular. Aside from occasional episodes of choking and cyanosis, improvement was rapid. She was given intravenous fluids for four days, then fed by gavage for three more. The tracheotomy tube was removed on the tenth post-operative day and she left the hospital apparently well nineteen days after admission.

CASE 3—A white boy aged 16 years was seen on the third day of illness. Because of rigidity and signs of irritation a diagnosis of meningitis had been made, but this was ruled out by spinal fluid findings including 70 cells per cubic centimeter. He had a nasal voice, and much glairy secretion accumulated in the pharynx. In twenty-four hours swallowing seemed impossible and breathing was shallow and irregular, but on deep aspiration of secretion by a catheter the breathing became more regular and deeper. At 9 p.m. the patient was put in the respirator with moderate improvement, although his own respiratory efforts were not well in rhythm with the mechanism. At 4 o'clock the next morning he was doing poorly with only jerky, shallow efforts as if intercostals, diaphragm and respirator were opposing one another.

Tracheotomy was decided on, and the patient was half taken out of the respirator for about ten minutes preparatory to moving to an operating room 50 feet distant, where I was preparing to operate. He became restless, vomited, foaming fluid appeared at the mouth, and respiration and the heart beat ceased. A stab tracheotomy was done, and about 15 cc. of thick mucoid secretion was aspirated from the trachea. The respirator was kept up for forty minutes but the patient could not be revived. He had apparently choked on his own secretion.

## COMMENT

It is probably true that most poliomyelitis patients with respiratory difficulty will recover if seen early and if well treated by postural drainage, careful aspiration and intravenous fluids during the most acute stage. But if one visualizes what may happen in the respirator tract it would seem that tracheotomy might have great value in certain instances.

The normal secretion of saliva is from 1,000 to 1,500 cc. per day and may be increased in nervous dis-

<sup>1</sup> Wilson, J. I. The Use of the Respirator, J. A. M. A. 117: 278 (July 26) 1941.

eases." To this is to be added the normal or inflammatory nasal, pharyngeal and perhaps bronchial secretion. If that cannot be swallowed or completely expectorated, coughed out or aspirated, it will find its gravity level, where it may lie as a pool over and in the airway. That condition was seen with a laryngoscope in case 1. On attempted inspiration, such fluid not only impedes the passage of air but if at all viscous, it may be drawn into the pulmonary area. In several such cases I have observed the respiration become shallow spasmodic and irregular and have seen this effect rapidly disappear on thorough aspiration or after tracheotomy, as it did in case 2. This effect on respiration might be due to a voluntary effort of the patient to keep from drowning himself in his own secretions, but since it has been observed in unconscious patients the result is probably, in part a reflex effect.

To this factor must be added that of anoxia which in the 3 cases cited was severe enough to cause unconsciousness. This anoxia necessarily would adversely affect the heart and respiratory muscles and respiratory centers as well as the nuclei of the nerves concerned in deglutition. Therefore, if there is already an involved respiratory center, or paralysis lower, involving the motor neurons of the intercostal muscles and diaphragm, the accumulating secretion may add an insuperable burden to an already faltering mechanism.

If relief cannot then be given by postural drainage including the effective face down position, and by aspiration, the short-circuiting of this secretion and the aspiration of its overflow by tracheotomy would seem to be indicated. Also since mortality from this operation per se, separated from the serious conditions for which it is usually done, is a fraction of 1 per cent,<sup>4</sup> there would seem little reason to withhold it for the last desperate chance. Management of a tracheotomized patient in the respirator presented no great difficulties. A special device to keep the rubber collar off the mouth of the tube could easily be constructed attached to an adjustable lock on the neck flange. For such cases the tracheotomy should probably be through the second and third cartilages. In order to prevent interstitial emphysema the least amount of dissection of fascial planes should be done, packing should be snug and the negative pressure of the respirator not greatly raised.

Rest in poliomyelitis has been emphasized as a very important factor in the recovery of compromised muscle function. Again, tracheotomy of an exhausted patient, with or without the respirator is a measure that may prove of increasing value to be used as Wilson says of the respirator, not as a last resort but to forestall the critical stage.

The use of the respirator has not often been satisfactory in the bulbar type, according to Wilson. It is possible that this has been so because forced inspiration through a pool of secretion in the airway sucked a serious amount of fluid into the lower airway. In case 1, in which the pool of secretion which even overflowed the nostrils, was short-circuited by tracheotomy the respirator was eminently satisfactory although the disease seemed almost entirely bulbar.

It may be questioned whether certain effects commonly ascribed to central damage may not rise from preventable anoxia and peripheral respiratory disturbance. Restlessness, mental symptoms and unconsciousness which were relieved by aspiration and tracheotomy

certainly seemed to be so in some of these cases. Even the postmortem findings of cerebral edema and hemorrhage not associated with cell infiltration, as well as myocardial degeneration, might arise from relative anoxia continued over a period of time. Pulmonary complications commonly called pneumonia, have been held responsible for many deaths. Possibly many of these may have been secondary to atelectasis and pneumonitis associated with aspiration, obstruction and immobile lung as demonstrated in experimental animals and seen in tracheobronchitis.<sup>4</sup>

During the 1943 summer and fall epidemic, 39 cases of poliomyelitis have been treated at the Evanston Hospital. Eight of these were of the so-called bulbar type. There was only one death cited in case 3 compared to a mortality in this area for the same epidemic of about 87 per cent.<sup>5</sup> Although the supervision and nursing care were unusual, the good results, though not statistically convincing, suggest that laryngeal care as outlined in some of the worst cases was quite important.

#### SUMMARY AND CONCLUSIONS

Emphasis in poliomyelitis with respiratory difficulty may well be shifted to the peripheral respiratory tract. Postural drainage, aspiration and use of the respirator should be given a fair trial. If these are not successful tracheotomy may be employed as a life saving measure. It may prove to have increasingly wide use before the critical stage. It is easily possible to use a respirator on a patient after tracheotomy. If the airway is cleared of secretion, probably most poliomyelitis patients with respiratory difficulty can be so treated.

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4 Galbraith, E. G. and Steinberg, Bernhard. The Developmental Mechanism of Pulmonary Atelectasis. *Ann. Otol. Rhin. & Laryng.* 46: 800 (Sept.) 1937. Galloway, T. C. Laryngotracheobronchial Obstructions and Their Secondary Effects. *Ohio State M. J.* 36: 851 (Aug.) 1940.

5 Reports of Chicago and Cook County health departments. Oct. 15, 1943. 1147 cases with 100 deaths.

**Diabetes**—The beginning of our modern understanding of this disease (diabetes) dates back to the opening year of the American Revolution, when Matthew Dobson, physician to the Liverpool Infirmary, discovered that the urine which is passed in too great an abundance in this disease, contains sugar. This discovery led the way to attempts to control the disease by limiting the amount of sugar in the diet, a method which was not very successful. And so the matter stood for another hundred years, until in 1889 the experimental attack on diabetes was begun by a Russian physician, Oskar Minkowski, then a young assistant to Professor Naunyn at the University of Strasbourg. Minkowski removed the entire pancreas in a dog and discovered that severe diabetes at once developed which persisted until the animal succumbed a few weeks later. He also found the sugar content of the blood elevated. The next step was made in 1900 by Eugene L. Opie, recently professor of pathology at Cornell Medical School but at that time a young instructor in pathology at Johns Hopkins. Studying the microscopic sections of the pancreas of a little girl who had died of diabetes, Opie saw that the islets of Langerhans were so degenerated that they could not be identified. These islands of cells of a special kind had been first described in 1869 in a doctoral thesis by a young Berliner, Paul Langerhans, who later became a distinguished pathologist. No one suspected their function however, until Opie noticed that they were damaged in those who had diabetes. His observation led the English physiologist Sir Edward Schafer in 1916 to postulate the theory that these special pancreatic cells produced some form of internal secretion that controlled the metabolism of sugar.—Haagensen C. D. and Lloyd Wyndham E. B. A Hundred Years of Medicine. New York: Sheridan House, Inc. 1943.

NEUROPSYCHIATRIC COMPLICATIONS  
IN VICTIMS OF BOSTON'S COCOA-  
NUT GROVE DISASTERALEXANDRA ADLER, M.D.  
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Observations on medical and physiologic aspects, neuropsychiatric complications and social service activities in the care of patients during the acute stages and immediately following the Cocoanut Grove fire disaster of Nov. 28, 1942, which killed 491 patrons and injured many more, have been reported recently through several articles.<sup>1</sup>

This report deals with psychiatric observations made during the first weeks and afterward on the survivors of the disaster who had been admitted to the Boston City Hospital during the night of the fire. These patients were followed up until the present time, which is a period of eleven months.

Members of the staff of the Neurological Unit of the Boston City Hospital saw some of these patients during the first week of their hospital stay. Many of the 131 patients were too disabled by their injuries to permit adequate early interview. Systematic neuro-

TABLE 1—Analysis of Material Available for Neuropsychiatric Observation

	Number of Cases
Total admissions	131
Deaths within the first two weeks	26
Patients having left the hospital within first 3 weeks	41
No report	21
Reported through questionnaire	20
Psychiatric interviews	54
With follow up	46
Without follow up	8
With patients who died later	3

psychiatric examination of all patients was requested on the eleventh day by the Burn Assignment of the Surgical Services of the Boston City Hospital. By the end of the third week all the patients who had not left the hospital by that time, numbering 54, had been examined neuropsychiatrically (table 1). Of these, 3 patients died later and 5 patients left Massachusetts and could not be reached for reexamination. Three of these were members of the armed forces overseas. Therefore this report deals mainly with psychiatric observations on 46 patients seen in the acute stage and followed up later. In 6 of these who had left Boston a late follow-up report was furnished by another physician or by the patient in a written response to a psychiatric questionnaire. In addition, psychiatric questionnaires were sent to the 41 patients who had left the hospital early, before systematic routine neuropsychiatric examinations were made. Of these 20 answered. Only 21 of the 131 patients are not subject of report. Almost

all of these 21 patients, having been discharged from the hospital within eleven days, had suffered only minor injuries.

Table 2 summarizes the psychiatric findings during the acute stages and the outcome. The table reveals that there is no essential difference of reactions or psychiatric end results between female and male patients. The following observations accordingly apply to both sexes.

## ANALYSIS OF TABLE 2

**Loss of Consciousness**—Of the 46 patients 29 reported loss of consciousness of variable duration. Only one 22 year old woman (patient 50) has a retrograde amnesia long enough to remember nothing of the disaster. Her last recollection is "having a rye with coke." The next thing she remembers is talking to people in the hospital the next day. The remaining 28 all remember the start of the fire and the ensuing panic. They lost consciousness after a few minutes. Table 3 reveals that in 16 of the 29 cases the loss of consciousness measured by the duration of amnesia, lasted more than one hour. Most of them recovered awareness in the hospital toward morning of the next day. The 11 patients in whom unconsciousness lasted only a few minutes found themselves lying on the floor of the night club frequently with bodies piled on them, and they remember being pulled out by rescue workers. In these no relapse into unconsciousness occurred, whereas some with long duration of unconsciousness had a brief lucid interval during the ambulance ride. The period of amnesia of the 1 patient who had suffered a cerebral lesion lasted several days.

The cause of the unconsciousness is still not absolutely certain. Carbon monoxide, which was found in the blood of several victims in amounts sufficient to kill, may have been the only cause, or other noxious fumes may have acted together with lack of oxygen and the intense heat created by the conflagration.

Of the 17 patients who did not lose consciousness, 11 were near exits and escaped within the first minutes. The remaining 6 had fallen early in the general stampede and were prevented from getting up again. Some reported that while lying on the floor they held a handkerchief before their mouth and nose to avoid inhaling fumes. Others reported that whereas they had felt choked while standing up they felt fresh, cool air and relief as soon as they had fallen. This suggests that the noxious agent, fumes, heat or lack of oxygen acted predominantly above floor level. The fact that most of the 29 who had lost consciousness remember going limp while standing up and, frequently, while trying to rescue others supports this explanation.

**Recollection of Events**—The outburst of flames at the start of the fire was observed by 41 of the 46 (table 2). Table 4 gives a picture of the sequence of events. Most patients reported having lost consciousness immediately after feeling choked. Accordingly, this terrifying event is remembered by the same percentage of patients who had lost consciousness as by those who remained conscious. Many fewer patients remembered being burned and trampled on since the latter events evidently occurred mainly while the patients had already lost consciousness.

**Psychiatric Outcome**—Of the 46 patients, 20 did not develop any psychiatric complications whereas 26 did. Tables 4 and 5 reveal the striking fact that of the 20 without psychiatric sequelae only 5 had not lost consciousness. Furthermore, table 3 reveals that the dura-

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1 Symposium on the Management of the Cocoanut Grove Burns at the Massachusetts General Hospital, Ann. Surg. 117: 801-965 (June) 1943. Clowes, G. H. A., Jr., Lund, C. C., and Levenson, S. M. The Surface Treatment of Burns, *ibid.*, to be published. Taylor, F. H. L., Davidson, C. S., and Levenson, S. M. Abnormal Nitrogen Metabolism in Patients with Thermal Burns, *New England J. Med.*, to be published. Cannon, J. M., Wilson, M. R., and Bartlett, H. M. Participation of Medical Social Workers in Boston's Cocoanut Grove Disaster, *Bulletin of the American Association of Medical Social Workers* 16: 18 (Feb) 1943.

2 Some of the initial examinations were made by Dr. H. Houston Merritt and Dr. R. D. Adams, who supplied early data.

tion of unconsciousness was prolonged more than one hour in 12 of the 15 patients who did not develop psychiatric complications, whereas the reverse is true of the 13 patients with psychiatric complications. In the majority of the latter, in 9 out of 13, the period of unconsciousness was only a few minutes. This suggests that unconsciousness and in particular prolonged unconsciousness was an essential factor in preventing the development of further psychiatric difficulties. The mechanism at work is perhaps comparable to the beneficial effect of shock treatment in mental disease. Here too attacks of petit mal with short periods of unconsciousness are undesirable whereas grand mal seizures with prolonged unconsciousness may bring about the setting for recovery from mental illness.

Among the patients with psychiatric complications, recollections of being choked and trampled on are very frequent when compared with the numbers obtained in patients with no psychiatric complications (table 5). These events, which usually were associated with fear of imminent death, were the most terrifying in the patient's memory and seem to have greatly contributed to the development of post-traumatic mental complications.

The types of psychiatric complications were consistent either with the syndrome of "general nervousness" or with that of anxiety neurosis. Patients in the former group complained chiefly of general irritability, fatigue

TABLE 2—Comparison Between Reactions of Female and Male Patients

	Females	Males	Totals
Totals	20	20	40
No loss of consciousness	0	8	17
Loss of consciousness	17	12	29
Remembers			
Seeing flames	23	18	41
Being burned	8	0	14
Being choked	11	7	18
Being trampled	10	4	14
Nightmares			
While in hospital	0	0	15
After discharge from hospital	4	0	10
Loss of relatives or close friends	15	8	23
Neuropsychiatric outcome after 3 months			
Normal	11	9	20
Psychiatric complications total	14	11	25
General nervousness	6	5	11
Anxiety neuroses	8	0	14
Brain lesion	1	0	1
Neuropsychiatric outcome after 9 months			
Normal	17	15	32
Psychiatric complications total	8	5	13
General nervousness	2	2	4
Anxiety neuroses	6	3	9
Brain lesion	1	0	1

TABLE 3—Duration of Unconsciousness in Patients With and Without Post Traumatic Psychiatric Complications

Duration of Unconsciousness	No Psychiatric Complications	Psychiatric Complications	Brain Lesion	Totals
Few minutes	2	9	0	11
15 minutes to 1 hour	1	1	0	2
More than 1 hour	10	8	1	16

and insomnia. In these cases change in working capacity was only moderate or absent unless work was contraindicated by their poor physical condition as by unhealed burns. Table 2 reveals the comparatively good prognosis of this condition, as on the nine months follow-up only 4 of the 11 patients, or one third, still complained of general nervousness. The histories and

the course of disease in patients of this group are fundamentally identical and the following example is representative.

CASE 51—A musical entertainer at the Coconut Grove, aged 17 years, single, had been an exceedingly well adjusted girl prior to her injury. On the night of the disaster she was in the

TABLE 4—Comparison Between Reactions of Patients With and Without Loss of Consciousness

	No Loss of Consciousness	Loss of Consciousness
Totals	17	20
Remembers		
Seeing flames	17	24
Being burned	9	0
Being choked	7	11
Being trampled	8	0
Nightmares		
While in hospital	7	8
After discharge from hospital	7	3
Loss of relatives or close friends	6	17
Neuropsychiatric outcome after 3 months		
Normal	5	10
Psychiatric complications total	12	10
General nervousness	4	7
Anxiety neuroses	8	0
Brain lesion	0	1
Neuropsychiatric outcome after 9 months		
Normal	11	21
Psychiatric complications total	6	7
General nervousness	2	2
Anxiety neuroses	4	5
Brain lesion	0	1

TABLE 5—Comparison Between Data for Patients With and Without Psychiatric Complications Three Months After Injury

	No Psychiatric Complications	Psychiatric Complications	Brain Lesion
Totals	20	25	1
No loss of consciousness	5	12	0
Loss of consciousness	15	13	1
Remembers			
Seeing flames	17	24	0
Being burned	7	7	0
Being choked	4	14	0
Being trampled	3	11	0
Nightmares			
While in hospital	5	10	0
After discharge from hospital	0	10	0
Loss of relatives or close friends	10	10	1

ladies' room when she heard people rushing around. She saw fire shoot up the stairs and while trying to get out, felt choked. She fell and people stepped on her. She then lost consciousness for a few minutes and regained awareness when a fireman pulled her out. She had suffered burns of the face, arms, back and legs with 30 per cent of the surface area burned and with the burns equally divided between second and third degree. She stayed in the hospital until May 1, 1943. During the first months she slept poorly and had several terrifying dreams about fire. She did not want to be left alone and felt that she would always live in fear of fires. After coming home she first disliked the idea of going to crowded places but later on did not mind it. She still chooses to sit near an exit. (This reaction is shown by practically all patients regardless of whether they developed psychiatric complications or not.) She felt tired for many months, and loud noises irritated her. When she heard fire sirens she kept wondering whether her relatives were safe. Nevertheless she resumed her practice of singing and playing as soon as she went home, and her interest in her profession has never abated. On the nine months follow-up she had recovered from her nervousness. She had not had any frightening dreams after coming home and felt happy to be alive. Her relatives think that her personality has not changed.

Patients with symptoms of "anxiety neurosis" complained mainly of fears and anxiety which they were unable to control and which prevented them from read-



justing to normal activities. Their prognoses were not good, as 9 of the 14, or two thirds, had hardly improved when reexamined after nine months. The complaints of the patients in this group are also much alike and are represented by the following case.

**CASE 2**—A youth of 20, a clerk, had been somewhat excitable and easily angered prior to his injury but aside from that had been well adjusted to his professional and married life. On the night of the disaster he was about to leave the night club and stood near an exit waiting for his wife, who was four months pregnant. He suddenly saw flames, was milled around, lost sight of his wife and soon escaped through an exit. The patient suffered second degree burns of the face, neck and hands. Five per cent of the total skin area was involved. Shortly before leaving the hospital on Dec 15, 1942 he was told by the priest that his wife had perished in the fire. Until then he had thought she had been saved. He became deeply depressed and has been so ever since. He went back to work in January 1943 but his working capacity has suffered. He is much slower and has lost all interest in his work. In his spare time he thinks of the disaster and of his wife, feels that he will never be interested in another girl. He cannot concentrate and starts shaking all over whenever he has a slight argument. He is constantly afraid of another fire and would never dare to go to a night club again. He sits down in moving pictures only if there is a seat in the last row so that he can get out quickly. He takes the same precautions in dining rooms. The sound of fire engines awakens him at night with a start. He had had no nightmares in the hospital, but they began one week after he came home. In the following months he relived the scenes of the fire in five terrifying dreams. They still occur, though rarely. He had the last nightmare in September 1943. The patient was rejected by the Army in March 1943 with the diagnosis of psychoneurosis. This depresses him deeply because he had hoped to be able to forget through strenuous army life. He is trying again to join the Army and intends to join the Merchant Marine if again rejected.

In this as in some other cases, feelings of guilt for not having saved the companion evidently aggravate the condition. Practically all patients who are suffering from psychiatric complications are under the care of their own physicians and are treated by them with sedatives and reassurance.

**CASE 12**—A woman aged 22 suffered a permanent brain lesion. Her pulmonary damage was only slight and her superficial burns were not over 3 inches in diameter and were healed in a few days. This case is reported in extenso elsewhere.<sup>3</sup> She arrived at the hospital in a state of confusion and psychomotor excitement, which lasted several days. She has ever since exhibited the picture of visual agnosia as it is produced by occipital lobe lesions. Her condition has improved, since through compensatory mechanisms, she is now able to recognize objects, but her reading and copying are still much impaired. Exposure to carbon monoxide is possibly the cause of the brain lesion.

Only 1 other patient is known to have suffered a permanent brain lesion. This is 1 of the 39 patients admitted at the Massachusetts General Hospital following the disaster.<sup>4</sup> It is probable that cerebral injury was present in other patients who succumbed.

An example of 1 of the patients who did not develop psychiatric complications is given in detail.

**CASE 50**—A woman aged 22, a factory worker, had finished the second year of high school and has ever since worked steadily without having ever noticed symptoms of mental difficulties. All she remembers of the events preceding the fire is sitting at a table and having "a rye with coke." Next thing she remembers is talking to people at the hospital early the

next morning. Her girl friend who did not lose consciousness until later, stated that they were at the ladies' room when the fire started. They both rushed out and were separated by the crowd. The patient suffered second degree burns of the face and hands. Two per cent of the total skin area was involved. She was hoarse for three weeks. On psychiatric interview, two weeks after the injury, she stated that it did not bother her in the least to think of the night of the fire and that she was looking forward to going to another night club. She returned to work in January 1943 completely recovered. A few days later she enjoyed her next night club visit thoroughly. However, when she got into an overcrowded night club a few months later she did not want to stay and she persuaded her party to go to another night club. Although it does not actually trouble her to speak about the fire, she rather changes the subject on such occasions. She states that it was quite a shock for her to hear that a man and a woman from her party had perished, but she does not suffer when thinking of it. At no time had she any frightening dreams. Neither she nor her friends have noticed any personality change except for her being even somewhat more active in her social life than previously.

**Nightmares** (tables 2 and 5)—One third of the patients had nightmares while in the hospital, in which they relived scenes of the disaster in a more or less realistic manner. They usually woke up frightened, trembling and perspiring. Terrifying events, such as this conflagration was, frequently cause nightmares since the victims are startled and for some time unable

TABLE 6—Comparison Between Patients With and Without Neuropsychiatric Complications and Their Degree of Burns and Respiratory Damage

	No Psychiatric Complications	Psychiatric Complications	Brain Lesion
Totals	20	25	1
More than 10% surface burns	4	5	0
More than 5% surface third degree burns	3	3	0
Severe respiratory damage	9	7	0

to deal with the event on a conscious level. Thus, such dreams were reported by patients who later developed mental disturbances as well as by those who exhibited no other psychiatric symptoms. Table 5 shows that nightmares are more likely to be had by patients with later mental complications. In particular, recurring nightmares or nightmares beginning some weeks or even months after the event are of different significance. They were not experienced after discharge from the hospital by any of the patients who had remained free of mental difficulties. But frightening dreams persisted in 10 of the 25 patients with psychiatric complications, thus indicating their continued anxiety. None of the patients with general nervousness had these late nightmares, but they persisted in 10 of the 14 patients with anxiety neuroses.

**Effect of Bereavement on Psychiatric Outcome**—One half of the patients had lost relatives or close friends in the disaster (table 2). Table 5 reveals an equal distribution of patients who had suffered bereavement and of those who had suffered no personal loss among those with and without psychiatric complications. This should not occasion surprise when one realizes from frequent experiences that grief reactions, severe as they may be temporarily, only rarely cause lasting psychiatric disturbance. While the patients were still in the hospital, the question of which would be the best time and which the best way to tell them of their loss came up frequently. It seems that no general rules can be laid down but that common sense has

<sup>3</sup> Adler, Alexandra. *Disintegration and Restoration of Optic Recognition in Visual Agnosia*, Arch Neurol & Psychiat, to be published.  
<sup>4</sup> Cobb, Stanley, and Lindemann, Erich. *Neuropsychiatric Observations*, Ann Surg 117: 814-824 (June) 1943.

to decide this problem. For instance, it is generally known that uncertainty may be more disturbing to a patient than final knowledge of the loss. Therefore anxious questions should be answered truthfully and sympathetically.

On the other hand, one would refrain from adding another burden such as a death notice to a patient at a time when his physical condition is precarious.

Table 6 allows a comparison of numbers of patients with and without psychiatric complications in relation to the severity of burns and respiratory involvement. It shows that there is an about equal distribution of severely affected patients among the two groups. Actually there are relatively fewer patients severely burned and with severe respiratory damage in the group with psychiatric complications than among the patients with no post-traumatic changes. However, the difference is too small to allow any conclusions other than that the occurrence of psychiatric complications did not bear any direct relationship to the severity of burns or respiratory damage.

Twenty patients with whom personal interviews were not obtainable are not included in the statistical analysis of psychiatric observations. In answer to a psychiatric questionnaire (table 1) 9 reported mental difficulties which consisted of nervousness, insomnia, fears and anxiety, whereas 11 of them stated that they had not noticed any psychiatric changes after the disaster.

#### SUMMARY

Of the 131 patients brought to the Boston City Hospital during the night of Boston's Coconut Grove fire, neuropsychiatric examinations in the hospital and later interviews were carried out on 46 patients. Of the remaining 85 patients 39 died. Twenty answered through written questionnaires, whereas of 26 patients no follow-up was obtainable.

Of the 46 patients 20 did not manifest psychiatric complications at any time afterward whereas 25 presented symptoms of general nervousness and anxiety neuroses lasting at least three months. Nine months after the disaster 32 of the 46 patients did not show any aberration from their pretraumatic personality, whereas 13 still suffered from general nervousness and anxiety neuroses. One patient has a lasting brain lesion with the symptoms of visual agnosia. This lesion of the occipital lobe was probably caused by exposure to carbon monoxide fumes but may also have been caused by other noxious gases or lack of sufficient oxygen supply.

Twenty-nine of the patients had become unconscious during the fire as against 17 who did not lose consciousness. The loss of consciousness was less than one hour in 13 instances and lasted from one to several hours or days in the remaining 16.

Of the 20 patients who did not develop psychiatric complications 15 had lost consciousness, which with 12 of the 15 was prolonged beyond one hour. Of the 25 patients with psychiatric complications 13 had lost consciousness. This, however, was short below one hour in 10 of the 13 cases. Therefore unconsciousness, and in particular prolonged unconsciousness prevailed in patients who had staved free of psychiatric complications, whereas there was no loss of consciousness or it was of very short duration in most of the patients with post-traumatic mental complications.

The percentage of patients who had lost relatives or close friends in the disaster was the same among those who developed psychiatric complications as it was in patients whose personality did not manifest post-traumatic changes. Severe and light degrees of burns and of respiratory involvement were distributed in about equal percentages among patients with and without psychiatric complications.

## DISTRIBUTION OF EPIDEMIC KERATOCONJUNCTIVITIS IN THE UNITED STATES

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Keratoconjunctivitis is not a new disease. It was described by Stellwag von Carion<sup>1</sup> and by Fuchs<sup>2</sup> in 1889, and since that time severe and extensive outbreaks have been reported by Wright,<sup>3</sup> Herbert,<sup>4</sup> Kirkpatrick<sup>5</sup> and Kirwan<sup>6</sup> from India, Viswalingam<sup>7</sup> from Malaya and Mulock Houwer<sup>8</sup> from Java. Epidemics have occurred in China, Japan, Tasmania, Germany, the Balkans and England. No race is exempt and no particular occupation is either predisposing or responsible for it.

The attention of the medical men of the United States was called to the potential economic loss of man power hours by Rieke,<sup>9</sup> Holmes,<sup>10</sup> Hogan and Crawford<sup>11</sup> and others.

The particular phase of the subject to which this communication is addressed is the distribution of epidemic keratoconjunctivitis in the United States.

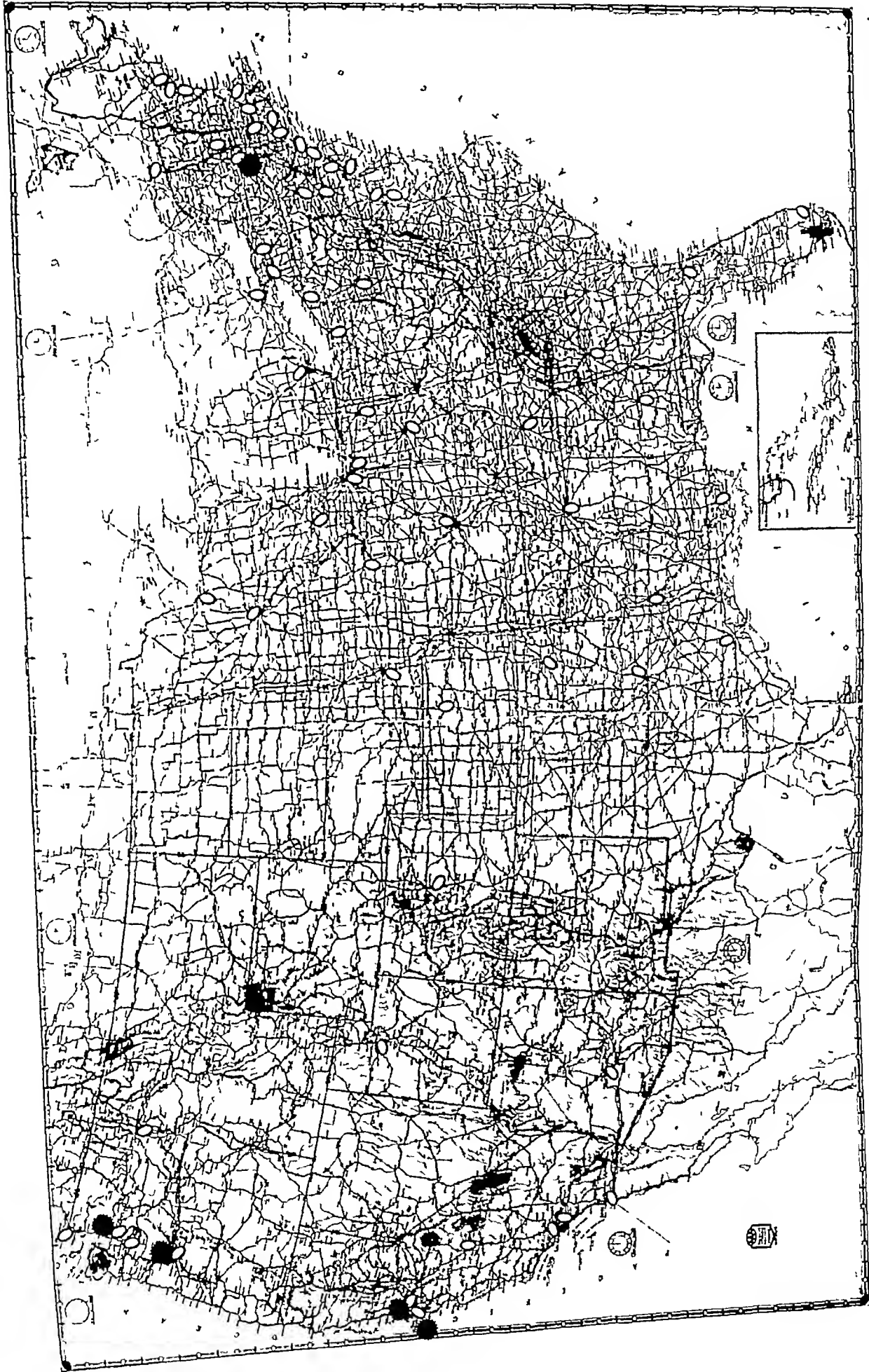
An inspection of the accompanying map will show that in the continental United States there have been only four large outbreaks, in Portland, Ore., Rieke saw several hundred, in Seattle Dawson reported hundreds of cases, in the San Francisco Bay area several thousand patients were treated by Nutting, Cordes, Hogan and Crawford and others, and in Schenectady in the capital district of Albany, N. Y. thousands of patients were afflicted.

L. C. Hobson<sup>12</sup> saw 16 patients all living in a Veterans Administration hospital in southern California, an isolated nonoccupational group. His paper was important not only because it was early but also because it established the basic fact that his patients were not industrial workers.

Paper published under the auspices of the Section on Ophthalmology. Citations not directly referred to are from written communications to the author.

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12. Hobson I. C. Acute Epidemic Superficial Punctate Keratitis. *Am J Ophth* 21: 113-115 (Oct.) 1938.

5. The degrees of burns and of respiratory involvement are evaluated according to a table prepared by Dr. Maxwell Finland and others.



Epidemic keratoconjunctivitis in the United States during the years 1941 and 1942. The black serrate circles indicate major outbreaks; the white ovals, cities from which reports to the author were received.

W J Holmes in 1940 reported an epidemic in the Hawaiian Islands. Shortly thereafter Rieke began to see afflicted shipyard workers and within six weeks treated 500 men. Significant phrases in his summary bear repetition: "involved a small percentage of the exposed men," "spread rapidly over the United States." In words made famous by the eminent statesman ex-Governor Alfred E. Smith of New York "let us look at the record" compiled from letters received from observers of wide clinical experience and from published articles.

R A Fenton of Portland, Ore. writes

Because this originated on this coast among shipyard workers here and on Puget Sound it was accepted as an industrial disease by the Oregon Industrial Accident Commission and the Washington Bureau of Labor and Industries. I suspect that more than 2,000 cases have been seen in and around Portland, and we have seen a good many cases coming from other parts of the state. Many individuals who have had no contact with industrial hazards, such as welding and are not acquainted with shipyard workers have had this disease. We are not seeing as many corneal involvements as we saw a year ago.

Reporting from Seattle, Purman Dorman includes among other statements

The condition first started in the vicinity of Seattle about December 1941 or January 1942. In the beginning I was fortunate to see almost every bad case that occurred within the Seattle Tacoma Ship Yard. The infection spread rapidly, the number of new cases rose from none in November 1941 to about 200 a month in January, February and March 1942. Since that time the company has given all medical care in such cases within their own yards. The number of 200 is only an estimate, but the number "peaked" within an interval of three to six months.

Most of the cases seen now are far less severe, with greatly shortened convalescence. From what I have been able to determine, with the added experience of some of my colleagues, apparently there are no permanent opacities within the stroma or on the epithelium, although the spots sometimes remain three to nine months.

F J Pinkerton of Honolulu told me that he had seen more than 450 cases, so that the Hawaiian Islands seem to have been a large focus of infection, but here again note that the majority were neither confined to industrial workers nor found in any one occupation. Pinkerton said he did not believe the disease could be classified by any qualified judge as coming under the provisions of workmen's compensation laws.

It is to be noted that there is a distinct clash of opinions between Pinkerton, who maintains that keratoconjunctivitis is not an industrial hazard, and two state commissions which claim that it is compensable. The former opinion is based on study, the latter suggests hasty conclusions or perhaps a political expedient. It is hoped that subsequent decisions will be based on facts, not prejudices or fancies. I hold with Pinkerton and others that it is not an occupational disease.

Several hundred miles from Seattle the extremely important and active San Francisco Bay area, including San Francisco, Oakland and surrounding cities and towns, was seriously affected. The epidemic has been scientifically described by Hogan and Crawford in their comprehensive article in which they demonstrate their clinical acumen in vivid portrayal of the signs and accurate description of the symptoms. Their communication is the best which has appeared, and although they may have included some cases which seem to be of greater severity than those seen elsewhere, their observations are comprehensive and their deductions

sound. Special attention is drawn to their severest cases of membranous conjunctivitis and uveitis, for these cases were not duplicated in the eastern experience. For factual and bibliographic data the reader is urged to study their original thesis.

Two letters add to the interest in this geographic location, one from F C Cordes of San Francisco who writes

In general the number of cases seen in the region of San Francisco is markedly reduced from the number seen in the original epidemic a year and a half ago. There have probably been some 250 to 300 cases during the past six months. The incidence of corneal complications is small by comparison with the original epidemic, consisting of a few punctate infiltrates in the superficial layers of the stroma of the cornea and in some instances in the epithelium.

The incidence of enlarged preauricular glands was much reduced and only occasionally was a membranous formation seen on the conjunctiva. So, all in all, the disease was much less severe, ran a shorter course and was accompanied by fewer complications.

The other from R J Nutting across the bay in Oakland, Calif., is a notable addition to the history of the California outbreak.

We first saw this condition of acute keratoconjunctivitis in the latter part of September 1941. The first patient was seen at the University of California, and in October we were seeing anywhere from 2 or 3 up to 10 patients a day.

Our first patients showed photophobia, lacrimation, different degrees of swelling of the lids, redness and thickening of the palpebral conjunctiva, and about half of the patients seen at that time had the corneal involvement commonly known as superficial punctate keratitis. In the majority of the later patients the punctate areas were mostly confined to the pupillary area, which naturally resulted in a definite loss of visual efficiency. About half of them had involvement of the preauricular glands. Other characteristic symptoms were a feeling of general malaise, slight sore throat and other symptoms of a moderate head cold. Usually there was an involvement of one eye at first and a few days later the other.

This epidemic was spread over a good cross section of the population in its first and most severe phase, which lasted from late September to the middle of November. Then there were only occasional new cases until the middle of December, when the recrudescence of the epidemic seemed to involve industrial groups such as the shipyard workers. This phase of the epidemic continuing through to the present has not been so severe as the first phase and is not so prone to result in visual impairment. The average course of the first phase was two to four weeks for the actual inflammation, of the second phase one to two weeks.

In our private practice I can conservatively say we have seen at least 500 or more patients with this disease and at one time in the Richmond shipyards there were over 1,000 cases. The disease spread rapidly until there were at least 5,000 cases in the Bay Area.

At the present writing we are still seeing a few mild cases.

The corneal lesions cleared anywhere from a few weeks to one year. We had no complications such as involvement of the interior of the eye or true ulceration of the cornea and no permanent disability. Other men have reported complications but from our experience we consider these secondary to some other factor.

We saw the first patients in this area, and diagnosed their disease as conjunctivitis with superficial punctate keratitis.

On account of our location on the coast, I personally feel our first patients were carriers from Hawaii and the Far East as our first patient at the University of California lived at the International House. Age was no factor, as we had one patient 3 weeks old with this disease and another in the 80's. In our experience this disease was most prevalent in the white race.

A Ray Irvine of Los Angeles investigated his district. He writes

During the last six months the epidemic of keratoconjunctivitis that we had here previous to that time has practically disappeared. I have seen not more than a half dozen cases, only 2 of which have shown any corneal involvement in the form of a superficial punctate keratitis. These cases were mild compared with some that we saw last year.

Inquiry among men who do industrial work assures me that the cases are comparatively rare now.

While from nearby Pasadena, W H Roberts writes

This city, as you know, is largely a residential city with few factories and industries. Twenty-two cases have been reported by the ophthalmologists of the city. We see the usual run of cases of keratoconjunctivitis, but I personally have seen none of the epidemic type.

J R Walker at Fresno said there were very few cases in his vicinity.

C A Vasey of Spokane, Wash., some hundreds of miles inland from Seattle and Portland, Ore., reports only about 25 patients with the disease, some of whom migrated from the Pacific Coast.

Still farther inland, E M Neher of Salt Lake City reports very few cases.

From Denver M E Marcove writes

I have contacted many of the Denver men with regard to their experience in acute keratoconjunctivitis and have found only one man besides myself who has seen any cases. Dr D H O'Rourke says he has seen about 25 cases in the past six months. I have seen 12. The incidence has not assumed epidemic proportions in our city.

J H Judd of Omaha writes

Some of the local men have not yet reported as to their records of acute keratoconjunctivitis. We have not had more than 35 or 40 cases in this locality, and most of these were mild. Only a few showed any serious corneal involvement, and in only 3 was there any involvement of preauricular and cervical lymph glands.

Fifteen of my cases occurred in one department of a creamery company with an incidence of 1 new case a day until the company was forced to shut down for about four days because of an explosion of the refrigerating system. Since that time 20 new cases have developed. Our cases are apparently all self limited.

A C Hilding of Duluth, Minn., writes

We have not had anything out of the ordinary in this community.

F E Burch of St. Paul reports practically no cases.

S R Gifford of Chicago summarizes his experience

I have been seeing for the past five years a group of cases which I have considered as belonging in the class described as epidemic keratoconjunctivitis. There have been about 30 of these in my office practice and I cannot tell you exactly how many we have seen at the clinic, since the cases there are seen by different men and are probably not diagnosed in the same way. These cases differ somewhat from the present very acute form of the disease and within recent months I have seen only 2 of these acute cases which seem to answer the description of Hogan and Crawford.

My own opinion is that they are all cases of the same disease, but when the condition assumes the epidemic form the virus increases in virulence and produces a somewhat different picture.

E L Bulson of Fort Wayne, Ind., and C W Rutherford of Indianapolis found few in their districts. Masters at a later time could collect only a few that were typical, so that Indianapolis seems to have been spared.

L T Post and W H Luedde interrogated their colleagues in St. Louis and determined that only 14 cases had been seen in that metropolis.

Swinging back to the dry clear air of Phoenix, Ariz., we hear from D F Harbridge who writes a long and interesting account of his experience with several cases but by no means an epidemic.

E H Cary of Dallas reports for Texas a few isolated cases.

F A Davis in Madison, Wis., has not observed any increase in the number of cases of keratoconjunctivitis.

C L LaRue of Shreveport, La., found only a limited number, as did C A Thigpen of Montgomery, Ala.

And from New Orleans C A Bahn reports that very few cases have been seen or recorded by the physicians of his community. A similar report was received from W A Cook of Tulsa, Okla.

E N Robertson of Concordia, Kan., P J Lemfelder of Iowa City, H C Ellett of Memphis, Tenn., M McT Cullom of Nashville, Tenn., N M Black of Miami, Fla., S A Richardson of Jacksonville, Fla., M F McCaslin of Pittsburgh, Pa., Carsen of Scranton, Pa., and W T Davis in Washington, D C., found no evidence of an epidemic.

Clapp reports

I desire to say that we have seen between 30 and 40 cases during the past six months. These cases have never been in the form of an epidemic nor have they been like those cases reported by Rieke on the West Coast. In fact, while the cases have been more numerous, they have not been in any particular way different from former cases of keratoconjunctivitis with the possible exception that the lesions have been seemingly more resistant to treatment.

I have also inquired at the free clinics of my colleagues and they have seen far fewer than we have.

W O LaMotte of Wilmington, Del., and E S Sherman of Newark, N J., noted only isolated, rare cases.

From the Philadelphia and Camden area, which includes immense manufacturing plants of various kinds and large shipbuilding yards, Burton Chance reports

Numerous cases have been seen in this community without, however, its being a widespread epidemic. One group at the Wills Hospital consisted of 30 odd patients, another group, of only 8 or 10, not sufficient for great stress to be laid on them. Along with swelling and redness there has been but scant discharge, in which no specific, hitherto unnamed organism was found. Not all patients had swelling and tenderness of the preauricular glands. One of the surgeons was affected but he has entirely recovered.

and J S Shipman of Camden, N J., writes

Regarding the cases of keratoconjunctivitis seen by the men in Philadelphia during the past six months, I can say that we have seen far too many but not, I think, in the proportions which I understand you have up in your section. At the Wills Hospital we had about 20 or 30 cases develop in the wards, and so far as I know only 2 of the patients had corneal involvement.

One of my associates in the clinic found the same condition in his right eye but without any definite corneal involvement.

Dr J M Wotring of Reading, Pa., reports about 50 cases in that city, while Dr G W Schlindwein of Erie, Pa., had none.

The New England states have been remarkably free. T L Terry of Boston has carefully checked Massachusetts and summarizes the results as follows:

To date 66 possible cases of epidemic keratoconjunctivitis have been reported by private physicians. Tabulation on the



basis of employment showed 26 nonindustrial (housewives and children) and 40 industrial (miscellaneous industrial 30, shipyards 10). The more suspicious cases were followed up, but in no case did the observer record the classic clinical symptoms, a duration of over two weeks or any epidemic characteristics.

One physician in Brockton described a case with the classic symptoms, duration and sequelae. This condition occurred in a housewife who had no history of contact. Neutralization tests were made.

The diagnosis was made in 2 other cases by two separate physicians, but the patients did not return for follow-up, the implication being that they improved rapidly, tending to negate the diagnosis.

Four cases were reported at each of two plants. Investigation proved, however, that the conjunctival disease in one case was due to the use of a solvent and in the other to local irritation.

E. N. DeWitt of Bridgeport, Conn., said that he and his colleagues had seen quite a few, E. M. Blake of New Haven, Conn., very few, and this was the experience of W. F. Holzer in Worcester, Mass.

Parker Heath of Detroit, when he spoke at the meeting of the Michigan State Medical Society, reported 50 known cases and said that probably many had not been recorded.

H. W. Cowper of Buffalo estimates that there were 200 to 300 cases in that district.

On the other hand, in industrial Rochester, N. Y., A. C. Snell could uncover only a single record.

G. Marshall of Rutland, Vt., found no cases in his state.

H. F. Hill of Waterville, Me., S. J. Beach of Portland, Maine, and W. E. Kershner of Bath, Maine, the site of the extensive shipyards, all report only a few cases.

J. A. MacMillan of Montreal writes:

I got in contact with the French oculists and those who are doing the Army work and our own group and none of the men have noticed any difference whatsoever in the ordinary run of conjunctival and corneal lesions.

And from the Pacific Coast, C. E. Davies of Vancouver, B. C., reports:

We have been relatively free of this condition, and as far as I am aware there is no evidence in lower British Columbia of anything that might be interpreted as of an epidemic nature.

As one approaches the region of greatest concentration in the East, one stops in Brooklyn, where J. N. Evans observes:

You will be interested to know that in spite of our great shipping interests in Brooklyn and the fact that the Long Island College Hospital is on the water front, we have, nevertheless, seen practically no cases of keratoconjunctivitis. The same holds true for the Brooklyn Eye and Ear Hospital. We have discussed this peculiar situation at the New York Ophthalmological Society and have thus far not found a satisfactory explanation.

I suppose there must be a few cases but not enough for the men to remark about.

In New York Conrad Berens interviewed the ophthalmologists of the various hospitals to obtain the following reports:

W. G. Frev: No case of epidemic keratoconjunctivitis in the clinic at St. Luke's Hospital.

W. B. Allen: Lately we have had quite a few cases of what we diagnosed as acute epidemic conjunctivitis, but in my clinic in the Bronx Eye and Ear Infirmary we have had only one.

D. B. Kirby: Two nurses and 4 patients were treated at Bellevue Hospital.

J. M. McLean: We have seen over 20 patients with this disease and treated at least 12 with a 5 per cent aqueous solution of sodium sulfathiazole sesquihydrate. On the whole the patients so treated seemed to have a shorter and less severe course of illness than those whose eyes were irrigated with boric acid and treated with zinc sulfate. However the series is far too small to enable one to make any definite conclusions. Some of the eyes so treated seemed to clear in as short a time as four days. In no instance did we have as dramatic results as those reported by Braley with specific serum.

F. C. Keil: I might say that they were comparatively few over the period of the last few months. All of the four services at the Manhattan Eye, Ear and Throat Hospital treated not more than 20 persons for this infection.

E. F. Krug in a letter to Berens said he had seen quite a few cases in private practice.

Arnold Knapp approached the subject by interviewing colleagues and found 209 cases, the number collected by Braley. Some of these may be duplicated in the other reports.

Sanders,<sup>13</sup> Braley,<sup>14</sup> Berliner<sup>15</sup> and others have written articles.

And so one comes to the Eastern focus in Schenectady, N. Y., and the adjacent cities. From Troy, N. Y., F. M. Sulzman reports 30 cases.

In Schenectady there are two large plants, the General Electric and the American Locomotive. From what I consider reliable information, about 4 per cent of the population of the community were afflicted with keratoconjunctivitis. The percentage was the same for the employees of the two plants.

The epidemic started in September 1942, spread rapidly and then almost stopped, a second wave of less intensity followed. Now there are only sporadic cases.

The involvement of eyes was on the whole much less severe than the extreme form described by Hogan and Crawford. Deep corneal invasion was rare, and iritis was seen only a few times. In some the conjunctival reaction was intense, in others slight. There was no definite relationship between the severity of reaction and the extent of corneal infiltration. With the exception of the usual apprehension of any patient with the disease, the mental and physical reactions were in the main not noteworthy or different from what is usual with a conjunctival infection. The end results are and will be for a long time under observation. The corneal infiltrates are absorbing.

#### SUMMARY

A worldwide conjunctival and corneal disease assumed epidemic proportions on the Pacific Coast and later in an inland city. The explanation of its predilection for some coastal cities in the West and its practically complete absence in similar localities in the East is something to engage the attention of the student.

Its failure to appear in any of the great army mobilization centers speaks well for the health of the men in service as well as for the high standard of sanitation in the camps.

<sup>13</sup> Sanders, Murray. Epidemic keratoconjunctivitis. *Arch. Ophthalm.* 28: 581 (Oct.) 1942. Sanders, Murray and Alexander, R. C. Epidemic keratoconjunctivitis. *J. Exper. Med.* 77: 71 (Jan.) 1943. Sanders, Murray, Gulliver, F. D., Forchheimer, L. L., and Alexander, R. C. Epidemic keratoconjunctivitis. *J. A. M. A.* 121: 250 (Jan. 23) 1943.  
<sup>14</sup> Braley, A. E., and Sanders, Murray. Treatment of epidemic keratoconjunctivitis. *J. A. M. A.* 121: 999 (March 27) 1943.  
<sup>15</sup> Berliner, M. L. Epidemic keratoconjunctivitis. *Am. J. Ophthalm.* 28: 0 (Jan.) 1943.

## CONCLUSIONS

Keratoconjunctivitis is not a new disease. It affects young and old.

There has been no epidemic in the shipyards on the Gulf of Mexico or along the Atlantic Coast, proving conclusively that it is not a shipyard disease per se.

During the rush of war and the overwhelming number of cases it is possible that several diseases have been included under the title epidemic keratoconjunctivitis. It is certain that more complications and greater and more extensive ocular involvements were reported from the West Coast and Hawaii than have been experienced in other parts of the country.

To infer that the epidemic spread throughout the United States is not warranted by the collected facts.

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## ABSTRACT OF DISCUSSION

DR THOMAS D ALLEN, Chicago. Is this a new disease? Is it infectious? What should be our attitude? We in the Chicago region would agree in part with Dr Bedell. It is not new in the world, but as it exists in the United States today it is new to us. It is with us in a mildly endemic form, cropping up among most unexpected people—professors, shopmen, laborers, lawyers, stenographers, traveling men, housewives, merchants, businessmen, seldom are two in a family affected simultaneously, although in a given shop several in a group may have the disease at the same time. Any ophthalmologist who has had the disease as I have and has traced it to the source, as I did, would agree that it is infectious. Why it is that in some communities there seems to be a lack of immunity and in others there is no trace of the disease is a question epidemiologists are trying to solve. Dr Sanders has found an exact way of determining the presence of immune bodies in the blood of individuals but it is tedious, time consuming and expensive. In communities where it has suddenly gained access its control has been in direct proportion to the vigilance of the medical profession and the local boards of health. A few cases were seen in Chicago last summer (1942) but the medical profession did not awaken to the serious import of the situation till about Christmas. Then an intensive campaign was mapped out, with the result that we have an active committee. We are attempting to trace the source in each case. We have noted in the Hammond, Ind., region an apparent change in the character of the disorder (Dr Hedwig Kuhn reports that only about 10 per cent develop keratitis as opposed to about 65 to 80 per cent at first). Soap and water are our first line of defense. Prompt isolation and treatment have saved us from a real epidemic.

DR MICHAEL J HOGAN, San Francisco. I have been interested in the distribution of this disease, as it has a bearing on the nature of the causative agent and the method of its transfer. The results of Dr Bedell's survey lead one to attempt several conclusions. First, that the epidemic on the Pacific Coast must have been initiated by patients who acquired the disease in the Hawaiian epidemic and carried the infectious agent to the mainland. Second, that the disease first gained a foothold in shipyard workers and was spread rapidly among them both by close contact and by the considerable shifts in personnel which occurred during 1940-1941. These facts would indicate that the disease, whatever its initial method of spread, was further disseminated by contact infection. From shipbuilding plants the routes by which this condition might reach nonindustrial areas would not be too difficult to trace. We have no knowledge concerning the methods of transmission of this disease from area to area, whether it is by insect or other vector, carriers or missed cases. Therefore it is more difficult to explain outbreaks in other portions of the country, such as Schenectady, while intervening areas are unaffected. I know of a number of patients with the disease who left this area to visit Chicago and New York and were certainly capable of spreading the disease. Yet the comparative incidence of the disease in these cities was low. I concur that the disease is not directly the result of lowered resistance from corneal foreign bodies, arc

flashes and a smoky atmosphere. However, one finds it hard to explain the high incidence of the disease in industrial plants, while the incidence in the general population is relatively low. The California State Industrial Accident Commission has ruled that the disability resulting from the disease is compensable in this epidemic because the incidence of the disease was higher among shipworkers than in the rest of the population. The California State Supreme Court has concurred with this finding. Many of us have disagreed with this opinion, but employers have been ordered to recompense their employees.

DR A J BEDELL, Albany, N Y. Dr Allen's comments on the widespread distribution of the disease, how it attacks many people of various social conditions who are in no way associated with shops, his belief that the character of the disorder has changed, and his statement that there is less corneal involvement have added to our knowledge of the condition. His last expression causes us to wonder if some common diseases are not being included under the heading of epidemic keratoconjunctivitis. There can be no justification for using the term unless the cornea is involved. I approve of Dr Hogan's disagreement with the decision of the California State Supreme Court in concurring with the California Industrial Commission that the disease is compensable "simply because the incidence of the disease was higher among shipyard workers than in the rest of the population." The New York State workmen's compensation law states that "an injury means only an accidental injury arising out of or in the course of employment and such disease or infection as may naturally and unavoidably result therefrom." It would be difficult to interpret this law so as to include epidemic keratoconjunctivitis. I have heard a recent report from Detroit, where approximately only 250 cases were observed. Attention is called to my paper which has just appeared in the *New York State Journal of Medicine* (43:2049 [Nov. 1] 1943).

## TOLUENE POISONING

CAPTAIN REX H WILSON

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Toluene is a hydrocarbon  $C_6H_5CH_3$ , also known as toluol and methyl benzene. It is a colorless, highly refractive inflammable liquid obtained from tolu and other resins and from coal tar. It boils at 110.4 C and has an odor similar to that of benzene. It is insoluble in water and is miscible with alcohol, ether, chloroform, carbon disulfide and petroleum benzene. Its specific gravity is about 0.865 at 25 C. It dissolves iodine, phosphorus, sulfur and, when used in large amounts, resins and fats.

Toluene constitutes 2 to 10 per cent of commercial benzene. It is used extensively as a solvent in the rubber, lacquer and munitions industries. It affords an excellent solvent for certain types of synthetic rubber because it dries rapidly. It is used as a starting material in the manufacture of trinitrotoluene.

The pathologic manifestations of exposure to toluene (toluol) are a matter of controversy. The conclusions reached by various authors are in decided variance with one another.

For the past several years I have had an opportunity to study the effects of exposure to various types of fumes in a large industrial plant. The observations found in this paper are drawn from experience encountered in the handling of employees exposed to toluene fumes.

Toluene poisoning is usually caused by absorption of toluene through the respiratory tract, the skin and the alimentary tract. The absorbed fumes exert a progressive depressant action on the central nervous system and the bone marrow. The action is that of a narcotic. Toluene is also a pronounced irritant to mucous membranes. A factor to be considered whenever it is

employed is individual susceptibility. Some persons will tolerate concentrations of toluene ranging up to 200 parts per million for six to eight hours daily with no demonstrable ill effects. Exposure to concentrations of toluene from 200 to 500 parts per million for six to eight hours will in most persons cause tiredness and lassitude. Concentrations over 500 parts per million for one to three hours are definitely dangerous and will cause symptoms attributable to depression of the central nervous system and the bone marrow.

Approximately 1,000 employees were exposed to the fumes of commercial toluene in concentrations varying between 50 and 1,500 parts per million for periods of one to three weeks. One hundred employees, or 10 per cent of the total number of employees exposed, showed symptoms severe enough to cause them to present themselves to the hospital for examination. Ten of these patients, or 1 per cent of the total number of employees exposed, showed resultant blood changes. No fatalities occurred in the entire group of patients. The remainder of the exposed employees did not exhibit any symptoms attributable to the fumes. All employees working with toluene were kept under constant supervision, and all who presented any physical complaints were sent to the hospital for examination.

The exposed employees coming to the hospital were classified into groups by using the degree of exposure as a basis. The concentration of the toluene fumes at the job site was measured with a combustible gas indicator. The readings were taken shortly after any exposed person appeared at the hospital with symptoms. Three groups of patients were made: group 1, those patients who had been exposed to concentrations of toluene fumes up to 200 parts per million; group 2, those who had been exposed to concentrations of fumes from 200 to 500 parts per million; and group 3, those who had been exposed to concentrations of fumes over 500 parts per million.

Approximately 60 per cent of the patients fell into group 1. The chief complaints of this group were headache, lassitude and loss of appetite. Physical and laboratory examinations gave essentially negative results. Because the complaints and physical findings were not of a sufficient degree to be considered pathologically significant, the symptoms of this group of patients were considered to be due chiefly to psychogenic and other factors rather than to toluene fumes.

Group 2 constituted about 30 per cent of the total number. Their complaints were more numerous and more pronounced. Headache, nausea, bad taste in the mouth, anorexia, lassitude, slight but definite impairment of coordination and reaction time and momentary loss of memory were the chief presenting symptoms. No significant physical or laboratory findings were noted.

Group 3 constituted about 10 per cent of the total number of patients. The chief complaints were nausea, headache, dizziness, anorexia, palpitation and extreme weakness. Loss of coordination was pronounced. Reaction time was definitely impaired. In several cases petechiae appeared under the skin.

In most of the cases all of the elements of the blood picture remained normal except the red cell count which usually dropped to about 2,500,000 per cubic millimeter. In 2 cases leukopenia developed with white cell counts of 2,500 to 3,000 per cubic millimeter. In these 2 cases all of the other blood elements were reduced. The red cell count was lowered and the platelet count was slightly decreased. The differential

count showed the polymorphonuclear cells to be decreased and the monocytes increased, reticulocytes were decreased. Biopsy of the bone marrow in these 2 cases showed partial destruction of the blood forming elements. A diagnosis of aplastic anemia was made in these 2 cases.

Treatment of the first group of patients consisted in observation and reassurance. Because of the lack of findings it was felt that exposure to fumes of toluene in concentrations under 200 parts per million was not especially hazardous. Repeated physical and laboratory examinations were made on these patients. If the symptoms persisted the patient was prohibited from working in fume departments.

Patients in group 2 were all considered to have potential aplastic anemia. Physical and laboratory examinations were done on these patients at frequent intervals. Multiple vitamin capsules and high vitamin, high caloric diets were prescribed. When the patients became symptom free they were permitted to return to work in a fume free department.

Patients in group 3 had serious poisoning. Fortunately they were few. All of them were immediately removed from the fumes. Most of them were unable to work at all. Some required hospitalization. A biopsy of sternal bone marrow was made for each one in this group. All whose bone marrow showed degeneration received whole blood transfusions at intervals regulated by the response. Usually the amount given at one transfusion was 250 cc of whole blood. One patient with aplastic anemia received three whole blood transfusions, and one received five whole blood transfusions. The response was good in both. Before being given a transfusion the patient was alkalinized with sodium or potassium citrate. Each patient in group 3 received 10 mg of liver intramuscularly daily, large daily oral doses of liver, iron, calcium, phosphorus, yellow bone marrow and multiple vitamins, 400 to 600 mg of ascorbic acid daily by mouth and a high vitamin, high caloric diet. Great care was taken to improve the patient's general hygiene. In the 2 cases of aplastic anemia absolute rest in bed was enforced and a constant watch was kept for secondary infection. In the other cases rest was an essential part of the treatment but absolute rest in bed was not insisted on.

After several weeks of rest, symptoms attributable to depression of the central nervous system began to clear up. Weakness was the most persistent symptom. Slight overexertion caused fatigue in one case of aplastic anemia several months after all other symptoms had disappeared.

Toluene may be assumed to be a dangerous chemical. Definite precautions should be taken whenever it is used. The following safeguards should be put into effect:

(a) The concentration of free fumes should never be more than 200 parts per million. The concentration should be ascertained frequently with a combustible gas indicator.

(b) Adequate ventilation must be installed to insure a fume concentration of less than 200 parts per million at any site where an employee might be working.

(c) New employees should be checked thoroughly before going to work in a department using toluene. Any evidence of blood dyscrasia or organic disease should be investigated and is usually sufficient cause to prevent that person from working in a fume department.

(d) Any person working with toluene who shows signs of illness should be seen by a physician. A com-

plete check-up should be made including a complete blood count. If the condition warrants, biopsy of the sternal bone marrow should be performed.

(c) Frequent adequate physical and laboratory examinations should be made on people working in toluene fumes. These should be made at least once a month where exposure is greater than 200 parts per million. The more frequent the examination, the less chance there is for poisoning to occur. Any change in physical status should be carefully investigated.

#### SUMMARY AND CONCLUSIONS

Of about 1,000 workmen exposed for from one to three weeks to toluene fumes varying in concentration from 50 to 1,500 parts per million, 100 or 10 per cent, showed symptoms attributable to toluene intoxication. Ten or 1 per cent, showed blood changes. No deaths occurred. Treatment was symptomatic and included multiple whole blood transfusions, oral administration of liver, iron, calcium, phosphorus and yellow bone marrow and multiple vitamin therapy.

Toluene has a definite toxic effect on the human system. With concentrations over 200 parts per million, symptoms attributable to intoxication of the central nervous system may occur and with concentrations over 500 parts per million depression of the bone marrow may occur.

Adequate periodic examination of employees exposed to toluene fumes is valuable in the early discovery of cases of blood dyscrasia and removal of the patients from the toxic environment and adequate therapy make it possible to return them to a normal state of health.

**French Medical Education**—To Antoine François Fourcroy belongs the honor of setting in motion the legislation which gave rise to present day French medical education. He himself had obtained his medical degree in 1780 with great difficulty because of poverty. The 6,000 livres necessary for the diploma had been contributed by friends of the celebrated anatomist Vicq d'Azyr, who boarded with young Fourcroy's family. Fourcroy had welcomed the Revolutionary movement and the reforms it promised, but he was averse to entering the wild arena of practical politics and at first refused to accept any office. In spite of his protests he was elected a member of the Convention—one of the few physicians in this body—and here he devoted himself almost entirely to questions concerning education. Convinced of the necessity of a supply of physicians, chiefly for the army, he consulted Prieur, the member of the Committee on Public Safety in charge of the teaching of sciences and arts, asking him to recommend some one capable of collaborating in mapping out a scheme of organization for medical education. The name of François Chaussier was suggested. Chaussier was not a Parisian but had been prominent in medical circles in the provincial city of Dijon, holding appointments there not only as Surgeon of the Prisons and Physician of the Hospitals but also as Professor of Chemistry, and giving courses in anatomy and legal medicine. Because he sympathized with the idea of the Jacobins regarding the centralization of all power in Paris, he proposed the establishment in that city of a single Central School of Health. Jacobin principles, however, had just passed into disfavor, and members of the Convention agreed that similar schools should be established at Montpellier and Strasbourg. Fourcroy concurred and the decree was so worded. It is curious to note that when the government came to publish the text of the decree it prefaced it by a copy of Chaussier's report advocating a single Central School of Health in Paris. A few footnotes were added to the effect that the recommendations contained in the report were applicable to three schools as well as to a single one—Olmsted, J. M. D., in *Essays in Biology*, Berkeley, University of California Press, 1943.

## THE CLINICAL SIGNIFICANCE OF THE PLASMA VITAMIN A LEVEL

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AND

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The chemical determination of vitamin A in the blood has been simplified so that it can be carried out in any clinical laboratory. Apart from the changes of the plasma vitamin A in nutritional vitamin A deficiency there are well defined variations of the plasma vitamin A content in many diseases. These variations not related to nutritional deficiency, appear more interesting since secondary, conditioned<sup>1</sup> or endogenous<sup>2</sup> vitamin deficiencies (due to processes within the organism) are as significant in medical practice as primary or exogenous due to reduced nutritional intake.

Two questions arise: 1. What determines the plasma vitamin A level? 2. How may a knowledge of this level be useful to the clinician?

We attempt to answer these questions on the basis of information gained from the literature and from observations on 2,673 vitamin A determinations on 454 patients.

In a statistical evaluation a *t* value<sup>3</sup> of 2.5 or over was considered a significant difference.<sup>4</sup> Our studies have been restricted to adults. As to children and infants, we refer to the extensive studies of Clausen and McCoord<sup>5</sup> and May, Blackfan, McCreary and Allen.<sup>6</sup> Since the carotenoid level is determined in the vitamin A assay, it will also be discussed.

#### METHOD FOR VITAMIN A DETERMINATION

If we exclude the spectrophotometric method, which is not widely used, almost all determinations of vitamin A in blood have been carried out by using the Carr-Price reaction (i. e. the blue color which a chloroform solution of vitamin A develops when antimony trichloride is added). If 4 cc. of plasma is used, the final blue color is strong enough to be read either in the photoelectric colorimeter<sup>8</sup> or compared visually with copper sulfate standards.<sup>9</sup> In our experience<sup>10</sup> the two

Statistical calculations and evaluation were done by Miss Elizabeth M. Adles.

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From the Hektoen Institute for Medical Research and the Department of Therapeutics of the Cook County Hospital and the Departments of Pathology and Internal Medicine, University of Illinois College of Medicine.

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3. *t* equals  $\frac{\bar{x}_1 - \bar{x}_2}{s \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$  *s* is mean of determined values.

$\sqrt{\frac{s^2}{n_1} + \frac{s^2}{n_2}}$  *s* is standard deviation of determined values.  
*n* is number of cases examined.

If *t* of 2.5 is taken as level of significance, the *P* equals 0.01.

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methods<sup>11</sup> have checked satisfactorily with each other. The copper sulfate standards or photometer can be calibrated with crystalline vitamin A or with oily vitamin A concentrates. Crystalline vitamin A seems superior for calibration. It is, however, quickly oxidized. Recently well standardized vitamin A concentrates have become available which are superior for calibration because of the stability and low price of the product, permitting thus repeated recalibrations.<sup>1</sup> The vitamin A values are recorded either in micrograms per hundred cubic centimeters of plasma as chemical value or in units as a biologic value depending on the response of vitamin A deficient animals. The conversion factor from micrograms to units varies with the biologic potency of the preparation, that of crystalline vitamin A alcohol being higher than that of vitamin A oil concentrates. The conversion factor of the standardized oil is according to the specification given 3.28. In the first phase of our studies the calibration was done with crystalline vitamin A but was rechecked with the standard oils. Because of the variability of the biologic assay, all values are recorded as micrograms.

Since carotene also reacts with antimony trichloride, most investigators made, in their final calculation, a deduction for the color due to carotene. However, since the carotene color develops much slower than that of vitamin A, this deduction is not quite accurate. Furthermore, it is doubtful that the color ascribed to carotene is entirely due to it and not to other carotenoids, especially in pathologic conditions. In our material, therefore, no deduction has been made for the carotenoid color, which may explain why our figures for vitamin A are somewhat higher than those reported by others. Levels below 4 micrograms were considered zero levels.

#### WHAT FACTORS VARY THE PLASMA VITAMIN A LEVEL?

1 *Nutritional Intake of Vitamin A*—Many months are required to decrease significantly the blood vitamin A level of normal adults by withdrawal of vitamin A from the food, whereas the carotene level begins to drop sooner.<sup>12</sup> Prolonged malnutrition reduces the vitamin A level,<sup>14</sup> among the poorer part of the population the blood level is usually lower than in the economically better stratum.<sup>15</sup> Not much is known as to the blood vitamin A level, in clinical nutritional avitaminosis A in deficient animals it is reduced.<sup>16</sup> In

individuals with signs of vitamin A deficiency the vitamin A level is not necessarily lowered.<sup>17</sup> On the other hand the intake of large doses of vitamin A increases the blood level temporarily.<sup>18</sup>

2 *Disturbances of Intestinal Absorption of Vitamin A*—In conditions associated with disturbances of intestinal absorption, low plasma vitamin A levels are common (celiac disease<sup>19</sup> sprue,<sup>20</sup> colitis,<sup>21</sup> pyloric obstruction,<sup>22</sup> pancreatic fibrosis and congenital atresia of bile ducts,<sup>6</sup> intestinal obstruction,<sup>23</sup> severe pulmonary tuberculosis<sup>24</sup> and infantile eczema<sup>25</sup>). In these conditions, to which liver disease<sup>18</sup> may be added the response of the plasma vitamin A level to the intake of high doses of vitamin A (tolerance curve) is also inadequate.

3 *Increased Demand for Vitamin A*—An increased demand for vitamin A is still a question. The otherwise somewhat constant requirements are doubtlessly increased in pregnant and lactating women.<sup>26</sup> Whether the requirements of infants are higher than of adults is doubtful.<sup>27</sup> Increased demands have also been presumed in hyperthyroidism<sup>28</sup> and infections<sup>29</sup> and have been found in choledochostomized rats.<sup>30</sup>

4 *Disturbed Interaction of Liver and Blood*—Normally the blood vitamin A level is maintained by the liver, which is its chief depot in the body.<sup>31</sup> In pathologic conditions this regulation may fail.<sup>32</sup> In pneumonia low blood levels have been found in patients whose liver at a later autopsy contained normal amounts of vitamin A.<sup>33</sup> In liver damage a similar discrepancy

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28 Wohl M. G. and Feldman, J. B. Vitamin A Deficiency in Disease of the Thyroid Gland. Its Detection by Dark Adaptation. *Endocrinology* 24: 389 1939. Thiele.

29 Josephs H. W. Vitamin A and Total Lipid of the Serum in Pneumonia. *Am. J. Dis. Child.* 65: 712 (May) 1943.

30 Graves, J. D. and Schmidt C. L. A. Studies on the Vitamin A Requirements of the Rat. *Am. J. Physiol.* 116: 4566 1936.

31 McCoord Augusta B. and Luce-Clausen Ethel M. Storage of Vitamin A in Liver of Rat. *J. Nutrition* 7: 557 (May) 1934. Lewis J. M., Bodansky, Oscar, Falk K. G. and McGuire G. Vitamin A Requirements in the Rat. The Relation of Vitamin A Intake to Growth and to Concentration of Vitamin A in the Blood Plasma Liver and Retina. *ibid.* 23: 351 (April) 1942. Josephs H. W. Factors Influencing the Level of Vitamin A in the Blood of Rats. *Bull. Johns Hopkins Hosp.* 71: 255 1942.

32 Lund and With. Popper Steigmann Meyer and Zevin.

33 Lindqvist T. Studien über das Vitamin A beim Menschen. *Acta med. Scandinav.* 1938: supp. 97: 1.



between liver depots and blood levels may occur<sup>10</sup> On the other hand an increased mobilization of vitamin A from the liver may take place under the influence of alcohol<sup>74</sup> or by sympathicoadrenal stimulation<sup>37</sup>

5 *Miscellaneous Factors*—Among the factors which influence the vitamin A metabolism, vitamin E<sup>36</sup> has come to the foreground As antioxidant in the intestine and also in the tissues it counteracts the oxidative

RESULTS

*Normal Plasma Vitamin A Levels*—As a result of the relation between the nutritional status and the plasma vitamin A level, economic conditions influence the latter The values of plasma vitamin A and carotenoid in normal subjects (doctors and nurses) agreed with those reported in the literature<sup>38</sup> The previously described sex difference in vitamin A and carotenoids

TABLE 1—Plasma Vitamin A and Carotenoid Levels and Vitamin A/Carotenoid Ratio in Normal Persons and in Hospital Controls

Diagnosis	Number of Cases	Plasma Vitamin A Level (in Micrograms per 100 Cc)			Plasma Carotenoid Level (in Micrograms per 100 Cc)			Vitamin A/ Carotenoid Ratio
		Maximum	Minimum	Mean	Maximum	Minimum	Mean	
Normals	27	82	20	40	150	42	81	0.64
Hospital controls								
Fractures	20	65	13	33	114	24	60	0.59
Hernias	8	44	20	34	110	5	46	1.87
Compensated (cardiac and arthritic)	37	75	0	35	135	12	57	0.76
Combined hospital controls	65	95	0	32	135	5	59	0.78

TABLE 2—Plasma Vitamin A and Carotenoid Levels and Vitamin A/Carotenoid ratio in Patients with Diseases of Biliary Tract or Liver with Statistical Comparison (t Value) to Hospital Controls

Diagnosis	Number of Cases	Plasma Vitamin A Level				Per Cent of Cases with Zero Vitamin A Level	Plasma Carotenoid Level				Mean Vitamin A/Carotenoid Ratio	t Value
		Micrograms per 100 Cc					Micrograms per 100 Cc					
		Maxi- mum	Mini- mum	Mean	t Value		Maxi- mum	Mini- mum	Mean	t Value		
Gallbladder disease	20	85	73	31	0.1	0	147	0	71	0.7	0.35	3.0
Incomplete biliary obstruction with out hepatitis	7	40	15	22	1.5	0	55	15	59	0.02	0.77	0.9
Incomplete biliary obstruction with hepatitis	7	15	0	2.7	10.0	71	161	18	69	0.5	0.08	6.0
Malignant complete biliary obstruction with hepatitis	16	20	0	4.6	11.0	53	325	5	82	1.2	0.23	3.8
Cirrhosis without jaundice	25	32	0	11	5.7	12	217	0	69	0.5	0.81	3.4
Decompensated cirrhosis with jaundice	35	16	0	3.1	13.0	64	166	0	81	0.2	0.04	8.8
Hepatitis in fully developed stage	17	10	0	2.5	14.0	65	94	9	51	0.5	0.07	6.2
Hepatitis in recovered stage	10	78	18	40	1.0	0	175	39	74	0.5	0.60	0.5

TABLE 3—Plasma Vitamin A and Carotenoid Levels and Vitamin A/Carotenoid Ratio in Patients with Various Diseases, with Statistical Comparison (t Value) to Hospital Controls

Diagnosis	Number of Cases	Plasma Vitamin A Level				Per Cent of Cases with Zero Vitamin A Level	Plasma Carotenoid Level				Mean Vitamin A/Carotenoid Ratio	t Value
		Micrograms per 100 Cc			t Value		Micrograms per 100 Cc			t Value		
		Maxi- mum	Mini- mum	Mean			Maxi- mum	Mini- mum	Mean			
Peptic ulcer and benign gastrointes- tinal diseases	40	101	9.2	27	0.8	0	117	0	53	0.6	0.72	0.2
Carcinoma of stomach	33	55	0	18	2.8	3	177	0	57	0.1	0.51	1.5
Anemia	15	44	0	17	2.4	7	57	0	38	1.5	0.63	0.5
Diabetes mellitus	12	53	0	27	0.5	5	300	19	95	1.0	0.51	1.1
Hyperthyroidism	5	61	17	35	0.1	0	90	29	57	0.06	0.60	0.5
Pneumonia	26	127	0	16	2.8	35	75	6	39	2.1	0.39	1.9
Infections	10	71	0	22	2.6	9	73	0	31	1.8	0.40	1.6
Severely sick patients	7	16	7.3	11	4.2	0	48	12	31	1.9	0.48	1.3
Renal diseases	20	103	13	82	2.2	0	255	0	101	1.4	1.18	1.0
Essential hypertension	19	73	18	38	0.6	0	111	21	57	0.1	0.78	0.0
Diseases with established vitamin A deficiency	3	0	0	0	16.6	100	18	0	7	11.0	0.00	7.3

destruction of vitamin A Furthermore, the lipid concentration of the blood has been considered important, since the lipids are probably the carriers of vitamin A<sup>37</sup>

34 Clausen, S. W., Baum, W. S., McCoord, A. B., Rydeen, J. O. and Breese, B. B. The Mobilization by Alcohols of Vitamin A from Its Stores in the Tissues, *J. Nutrition* 24: 1, 1942 Clausen, Breese, Baum, McCoord and Rydeen

35 Young, G., and Wald, G. The Mobilization of Vitamin A by the Sympathicoadrenal System, *Am. J. Physiol.* 131: 210, 1940 Thiele, W., and Guzinski, P. Sympathisches Nervensystem und Vitamin A Haushalt, *Klin. Wchnschr.* 19: 345, 1940

36 Davies, A. W., and Moore, T. Interaction of Vitamins A and E, *Nature, London* 147: 793, 1941 Hickman, K. C. D., Harris, P. L., and Woodside, M. R. Interrelationship of Vitamin A and E, *Nature, London* 150: 91, 1942

37 Josephs, H. W. Studies on Vitamin A Influence of Vitamin A on Serum Lipids of Normal and Deficient Rats *Bull. Johns Hopkins Hosp.* 71: 265, 1942 Josephs (footnotes 9 and 29) Wendt

was also apparent, in men the average vitamin A being 58 micrograms per hundred cubic centimeters of plasma and the carotenoids 74 micrograms with a vitamin A/carotene ratio of 0.78 In women the average vitamin A was 47 micrograms per hundred cubic centimeters of plasma and the carotenoids 85 micrograms, the ratio being 0.57

To evaluate the significance of the plasma vitamin A levels of patients who suffer from various diseases in

38 Murrill, W. A., Horton, P. B., Leiberman, E., and Newburgh L. H. Vitamin A and Carotene Vitamin A and Carotene Metabolism in Diabetics and Normals *J. Clin. Investigation* 20: 395, 1941 Kimble, Abt, Aron, Bundesen, Delaney, Farmer, Greenbaum, Wenger and White

39 Gorbham, Pack and Rhoads

40 Getz and Koerner

a charity hospital and who are of a lower economic stratum we used, as controls, patients with hernia or fracture or those convalescing from a heart disease, since in them no changes in the vitamin A metabolism can reasonably be assumed (table 1). Owing to technical reasons, almost all our patients were male, the hospital controls, therefore, were also male patients.

**Physiologic Variations of the Plasma Vitamin A Level**—In 5 cases plasma vitamin A and carotenoid levels were determined four times in twenty-four hours without significant variations, confirming previous reports.<sup>30</sup>

In 7 hospital controls without any signs of disturbed vitamin A metabolism the plasma vitamin A was determined daily for seven to eighteen days without any considerable changes being found as observed before.<sup>9</sup> The variations of the carotenoid level were much more pronounced (table 4).

**Vitamin A Level in Diseases of the Liver and Biliary Tract**—In uncomplicated gallbladder disease (without jaundice or infection) plasma vitamin A and carotenoid levels were within the normal average (table 2). In incomplete extrahepatic biliary obstruction (due to stone or stricture) but without evidence of liver damage as seen from the results of liver function tests (oral hippuric acid test, cephalin-cholesterol flocculation, cholesterol/cholesterol ester ratio, quantitative urobilinogen

ment of the liver and spleen and slight disturbance of the liver function. These had an average plasma vitamin A of 18 micrograms per hundred cubic centimeters and carotenoid of 66 micrograms, the vitamin A/carotenoid ratio being 0.28.

TABLE 5—Statistical Comparison (*t* Value of Plasma Vitamin A, Carotenoid and Vitamin A/Carotenoid Ratio in Different Liver Diseases

(See Table 2)

Comparison Between	Number of Cases	<i>t</i> Value Vitamin A	<i>t</i> Value Carotenoid	<i>t</i> Value Vitamin A/Carotenoid Ratio
Incomplete obstructive jaundice without hepatitis and	7	3.0	0.4	2.4
Incomplete obstructive jaundice with hepatitis	7			
Incomplete obstruction without hepatitis and	7	2.9	1.0	1.6
Complete obstructive jaundice with hepatitis	16			
Incomplete obstruction with hepatitis and	7	0.9	0.5	1.4
Complete obstructive jaundice with hepatitis	16			
Cirrhosis without jaundice and	25	2.7	0.5	2.9
Cirrhosis with jaundice	35			

TABLE 4—Variation of the Plasma Vitamin A and Carotenoid Levels in Hospital Controls in Serial Examinations

Length of Examination Period (Days)	Number of Determinations	Plasma Vitamin A Level (Micrograms per 100 Cc)			Plasma Carotenoid Level (Micrograms per 100 Cc)		
		Variation		Mean	Variation		Mean
		From	To		From	To	
18	9	19	27	23	51	114	97
12	11	10	15	12	48	51	50
18	9	29	39	34	60	176	80
10	9	34	53	43	42	54	49
14	12	23	39	34	90	126	105
18	10	49	61	55	57	90	90
7	4	24	29	27	93	105	101

excretion in urine and feces) the average plasma vitamin A level was somewhat but not significantly lower than normal, while the carotenoid level was increased. In similar types of cases but with evidence of secondary hepatitis and impairment of the liver function the plasma vitamin A level was considerably reduced and in a great number of cases zero levels were found. In patients with complete biliary obstruction due to a malignant tumor and associated with secondary hepatitis the plasma vitamin A level also was low. There was a significant statistical difference in the vitamin A (but not in the carotenoid) levels of the patients with incomplete biliary obstruction without hepatitis to those of patients with incomplete biliary obstruction with hepatitis as well as to those of patients with complete biliary obstruction with hepatitis. There was no statistically significant difference between plasma vitamin A levels of cases with incomplete and of patients with complete obstruction with hepatitis (table 5).

In comparison with the hospital controls patients with cirrhosis of the liver without jaundice showed a moderately decreased average plasma vitamin A level. This group comprised two types of patients.

1. Eight patients with arrested (compensated) cirrhosis whose only signs were cirrhotic habitus, enlarge-

ment of the liver and spleen and slight disturbance of the liver function. These had an average plasma vitamin A level of 11 micrograms per hundred cubic centimeters and carotenoid of 72, the ratio being 0.15.

2. Sixteen patients with decompensated cirrhosis as manifested by ascites, edema, spider nevi, esophageal bleeding and manifest impairment of liver function. These had an average plasma vitamin A level of 11 micrograms per hundred cubic centimeters and carotenoid of 72, the ratio being 0.15.

TABLE 6—Variations of the Plasma Vitamin A Level During the Course of Liver Disease

Diagnosis	Number of Cases	Average		Average Plasma Vitamin A Level in Micrograms per 100 Cc.		
		Days of Observation	Number of Determinations	On Entrance to Hospital	During Highest Peak	When Leaving Hospital
Patients with return to normal.	9	47	5	6	23	22
Patients reaching high levels (41-217 micrograms) in course of disease	12	87	10	21	73	51
Patients with fluctuation during observation (no complete recovery)	16	37	8	10	18	12
Patients with stationary zero levels	4	29	11	0	0	0
Patients with downhill course	1	24	10	12	12	0

In acute hepatitis at the height of the disease the plasma vitamin A level was very low. In patients with hepatitis who came under observation during the stage of recovery the average plasma vitamin A level was above normal.

In some cases with liver damage, plasma vitamin A levels of zero were found the incidence paralleling the degree of liver damage. Zero plasma vitamin A levels

<sup>39</sup> Getz, H. R. and Koerner, T. A. Vitamin A and Ascorbic Acid in Pulmonary Tuberculosis. Determination in Plasma by the Photoelectric Colorimeter. *Am. J. M. Sc.* 202: 831, 1941. Max Blackfan, McCready and Allen. *Lindqvist*.

were found in 53 to 71 per cent of the cases with hepatitis—whether they were primary or secondary because of incomplete or complete biliary obstruction and with progressive cirrhosis. The carotenoid levels did not show any significant variation from the normal and the statistically significant changes of the vitamin A/carotenoid ratio appeared when the vitamin A level was low. These changes were most accentuated in conditions with severe liver damage.

*Variations in the Plasma Vitamin A Level in the Course of the Disease*—Vitamin A determinations were made on 37 patients with liver disease in the course of the disease (table 6). Various types of curves of the plasma vitamin A level were obtained during the period of observation. In 9 cases a gradual increase of the plasma vitamin A level to approximately normal occurred synchronously with more or less complete recovery. In 12 recovered patients (the majority of them from acute hepatitides) the plasma vitamin A level rose to a high peak before it declined to the normal level. Of the patients who did not recover 16 showed an irregularly fluctuating plasma vitamin A level and 4 had constantly zero levels throughout the entire period of observation. In the two latter groups were mostly patients with decompensated cirrhosis. One patient with complete malignant obstruction showed a constant decrease in the plasma vitamin A level.

*Plasma Vitamin A Levels in Various Clinical Conditions* (exclusive of biliary tract and liver disease)—The plasma vitamin A and carotenoids levels and the vitamin A/carotenoid ratio in patients with peptic ulcer was normal.<sup>73</sup> In carcinoma of the stomach, however, the plasma vitamin A level was lowered with statistical significance the carotenoid level remaining unchanged (in agreement with previous observations<sup>40</sup>). In patients with anemia (with red cell count below 3 million) due to pernicious anemia blood dyscrasias or

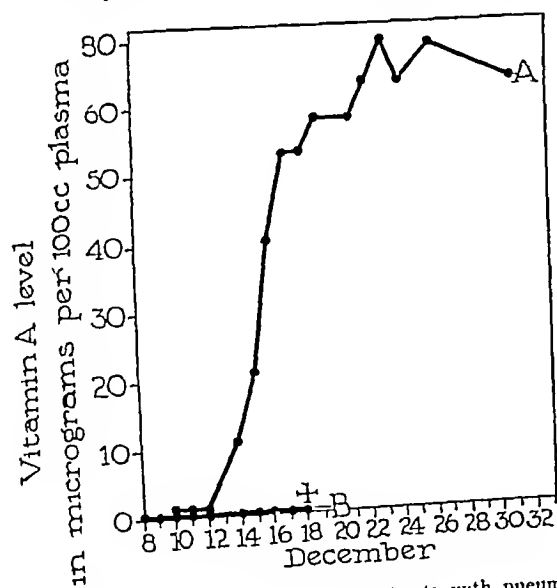


Chart 1—Plasma vitamin A levels of 2 patients with pneumonia A, recovering, B, fatal outcome

bleeding ulcer, the plasma vitamin A level was somewhat below normal (on the borderline of statistical significance) the carotenoid only slightly reduced.<sup>41</sup> In

diabetic patients the average plasma vitamin A level was not significantly reduced. The variations between maximum and minimum, however, were great, in 1 patient even a zero level was encountered. The carotenoid levels were occasionally above normal, the average not deviating from the normal. Thus only some of our cases showed the behavior described in the American literature<sup>42</sup> (low plasma vitamin A

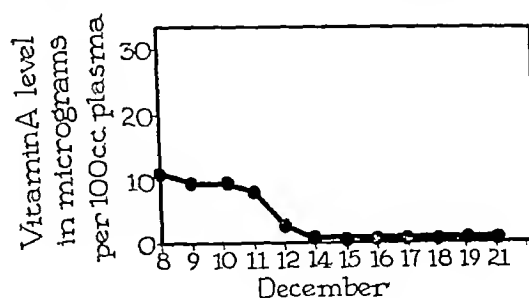


Chart 2—Plasma vitamin A level of a patient with carcinoma of the rectum in terminal stage.

levels associated with increased carotenoid levels) whereas the others coincided with reports from abroad.<sup>43</sup> In hyperthyroidism no significant variations were noted, in contrast to earlier reports.<sup>44</sup> In lobar pneumonias the plasma vitamin A levels were on the average low and in 38 per cent zero. Toxic patients showed very low or zero levels. The carotenoid level appeared reduced also, though not statistically significant. In other pyogenic infections a similar tendency was seen. In patients severely sick from various causes (not enumerated in this tabulation) the plasma vitamin A level was low and the carotenoid level reduced. In cases of nephritis or malignant nephrosclerosis with renal insufficiency the plasma vitamin A level was usually high, the average being almost three times that of the normal. However, since not all cases showed increased, some even reduced, values the increase reached only the borderline of statistical significance. The carotenoid levels also were somewhat higher than normal but likewise without statistical significance because of the wide range of the figures. In uncomplicated hypertension, however, no deviation from the normal was found, which is interesting in view of a recent discussion on a possible beneficial effect of large doses of vitamin A in hypertension.<sup>45</sup>

A woman with nontropical sprue and a young girl with nutritional vitamin A deficiency represent our cases of deficiency disease. Both showed plasma vitamin A levels of zero and extremely low carotenoids, the vitamin A/carotenoid ratio being changed accordingly.

*Changes in the Plasma Vitamin A Level in the Course of Various Diseases*—The alterations of the plasma vitamin A level in the course of disease were characteristic in patients who recovered or in those who had a downhill course. The changes during recovery were studied in 7 patients with pneumonia or infection and an average of eight determinations each were made

- 42 Stueck, G. H., Flaum, Gerald, and Ralli, Elaine P. Serum Carotene in Diabetic Patients, with Clinical Evidence of Carotenemia as Determined by Photo Electric Colorimeter, *J. A. M. A.* 109:343 (July 31) 1937. Ralli, Elaine P., Pariente, A. C., Brandaleone, Harold and Davidson, Sidney. Effect of Carotene and Vitamin A on Patients with Diabetes Mellitus. Effect of Daily Administration of Carotene on the Blood Carotene of Normal and Diabetic Individuals. *ibid.* 106:1975 (June 6) 1936. Heymann, Walter. Carotenemia in Diabetes, *ibid.* 106:2050 (June 13) 1936.
- 43 Wendt, H. Hypercholesterinaemia und Vitamin A, *Deutsche med Wochenschr.* 62:1213, 1936. Lindqvist<sup>43</sup> Thiele and Scherff<sup>44</sup>.
- 44 Clausen and McCoord<sup>45</sup> Wendt<sup>45</sup> Thiele and Scherff<sup>44</sup> Lindqvist<sup>43</sup>.
- 45 Wakerlin, G. E., and Moss, W. G. Treatment of Experimental Renal Hypertension with Vitamin A Concentrates. *Proc. Soc. Exper. Biol. & Med.* 53:149 1943.

40 Abels, C. A., Gorham, A. T., Pack, G. T., and Rhoads, C. P. Metabolic Studies in Patients with Cancer of the Gastrointestinal Tract I. Plasma Vitamin A Levels in Patients with Malignant Neoplastic Disease, Particularly of the Gastrointestinal Tract, *J. Clin. Investigation* 20:749, 1941. Thiele and Scherff<sup>44</sup>.

41 Abt, A. T., Aron, H. C. S., Bundesen, H. N., Delaney, M. A., Farmer, C. J., Greenbaum, R. S., Wenger, O. C., and White, J. L. Studies on Plasma Vitamin A. II. Relationship of the Plasma Vitamin A to Pregnancy and Anemia in Syphilitic Patients, *Quart. Bull., North Western Univ. Med. School* 10:245, 1942.

within sixteen days, the plasma vitamin A level returned gradually to normal and in 2 patients values above normal (i.e. 69 micrograms per hundred cubic centimeters) were found. Two patients with pneumonia showed persistently zero levels on ten and four daily determinations respectively; both patients died (chart 1). Three patients (2 with carcinoma and 1 with miliary tuberculosis) showed a decrease of the plasma vitamin A level during observation parallel with a general decline in their condition (chart 2).

## COMMENT

The plasma vitamin A level is constant under physiologic conditions during the day and on consecutive days in controls on an average hospital diet. Changes of the plasma vitamin A level are therefore significant, their clinical implication depending on the underlying disease.

**Liver Disease**—A reduction of the plasma vitamin A level was described in acute hepatitis<sup>46</sup> and in cirrhosis,<sup>47</sup> in the latter as a crude index of the disease process. In our series the drop of the plasma vitamin A runs fairly parallel to the degree of liver damage. Low mean vitamin A levels and even zero levels were encountered in the diseases in which the degree of liver damage is advanced (secondary hepatitis due to biliary obstruction caused by stones or tumor decompensated cirrhosis with jaundice, or toxic hepatitis in the fully developed stage). The reduction of the plasma vitamin A is less conspicuous in cirrhosis without jaundice, with distinct difference between progressive and arrested forms. In incomplete biliary obstruction without hepatitis the reduction of the plasma vitamin A level is moderate, whereas in simple gallbladder disease the level is normal. This, supported by a statistically significant difference between the groups of biliary obstruction with and without hepatitis and of cirrhosis with and without jaundice (the latter indicating superimposed hepatitis), points to reduction of the vitamin A level as a clinical sign of impaired liver function. The drop of the vitamin A level is not parallel to the degree of jaundice as seen from the difference between the relatively high plasma vitamin A level in obstructive jaundice without hepatitis, and the low level in cirrhosis, often with slight icterus. A plot of individual vitamin A levels against the icterus index shows no relation; the low levels in patients with jaundice paralleling the degree of liver damage. The drop of the plasma vitamin A level may hence be of diagnostic and prognostic value in liver disease. The prognostic importance is shown by observations made for several weeks, in clinical recovery the plasma vitamin A level rises to normal or even higher than normal whereas in a downhill course it progressively decreases. The determination of the plasma vitamin A level may thus serve as an additional aid in evaluating liver function although the occasionally high levels in the recovery stage may be confusing.

What causes the low plasma vitamin A level in liver disease? The most obvious cause seems to be impairment of intestinal absorption of vitamin A<sup>48</sup> which

runs parallel to the extent of liver damage.<sup>22</sup> Intestinal absorption damage alone, however, does not explain the drop of the vitamin A level within a few days in acute hepatitis, since lack of vitamin A intake reduces the vitamin A level only after some months.<sup>13</sup> Therefore, as other factors the inability of the liver to store vitamin A or increased demand for vitamin A should be considered. In both instances the liver depots should be depleted of vitamin A. This is the case in cirrhosis,<sup>49</sup> whereas in acute liver damage the liver is not always depleted but may show considerable vitamin A stores.<sup>50</sup> Liver biopsy specimens may show considerable amounts of vitamin A even if the blood is free of it.<sup>61</sup> The distribution of vitamin A in the liver, however, as seen under the fluorescence microscope is materially changed.<sup>51</sup> The vitamin A fluorescence has shifted from its normal sites (fine lipid droplets on the edge of the liver cells and the Kupffer cells) to pathologic areas in the liver such as fat droplets of various size. From here vitamin A is less readily discharged and therefore less available for utilization.<sup>52</sup> Seemingly the normal liver maintains the vitamin A level of the blood and prevents its decrease (for a limited time) even if the nutritional supply is withheld. In liver damage this regulation fails because of the shift of vitamin A to pathologic sites. The hemeralopia<sup>54</sup> described in liver disease is thus the result of functional avitaminosis A developing despite non-depleted liver stores. In chronic liver disease both disturbed absorption and disturbed regulation lower the plasma vitamin A level. Since both factors are related to liver damage, the plasma vitamin A level may indicate the degree of liver damage.

We found no evident relation of the plasma carotenoid level to liver damage, although the liver carotene stores are reduced.<sup>65</sup> The average levels do not deviate especially from the norm. That the vitamin A/carotenoid ratio decreases significantly in liver disease seems more due to decrease of the vitamin A level than to impaired conversion of carotene to vitamin A, as has been assumed.<sup>47</sup> Both the vitamin A and carotenoid levels depend on the efficiency of intestinal absorption, whereas the vitamin A level depends also on liver regulation. Our data emphasize the significance of the impaired regulation for the low plasma level in liver disease. However, the unspecificity of the carotenoid determination, as carried out with the colorimetric method, does not permit far reaching conclusions.

During recovery from acute hepatitis the vitamin A level rises not only to normal but temporarily even beyond it.<sup>60</sup> This compensatory hypervitaminemia in

49 Moore T. The Vitamin A Reserve of the Adult Human Being in Health and Disease. *Biochem J* 31: 155 1937. Haig and Patek.<sup>47</sup> Ralli, Popper, Paley and Bauman.<sup>48</sup> Popper.<sup>49</sup> Breusch and Scalabrino.<sup>57</sup> Wolff.<sup>60</sup>

50 Wolff L. K. On the Quantity of Vitamin A Present in the Human Liver. *Lancet* 2: 617 1932. Ralli, Popper, Paley and Bauman.<sup>48</sup> Breusch and Scalabrino.<sup>57</sup>

51 Stewart J. D. and Rourke G. M. Vitamin A Content of Plasma and Hepatic Tissue Biopsied at Operation: Effects of Preoperative Therapy in Obstructive Jaundice. *Surgery* 11: 939 1942. Popper, Steigmann, Meyer and Zevin.<sup>40</sup>

52 Meyer K. A. Steigmann, Frederick, Popper, Hans and Walters H. W. Influence of Hepatic Function on Metabolism of Vitamin A. *Arch Surg* 47: 26 (July) 1943. Popper, Steigmann, Meyer and Zevin.<sup>40</sup>

53 Popper, Hans, Steigmann, F. and Dymowicz H. A. Distribution of Vitamin A in Experimental Liver Damage. *Proc Soc Exper Biol & Med* 50: 266 1942.

54 Patek, A. J. Jr. and Haig C. The Occurrence of Abnormal Dark Adaptation and Its Relation to Vitamin A Metabolism in Patients with Cirrhosis of the Liver. *J Clin. Investigation* 18: 609 1939. Wohl M. G. and Feldman J. B. The Occurrence of Avitaminosis A in Diseases of the Liver. *Am J Digest Dis* 8: 464 1941. von Drigalski W., Kunz, H. and Schlupmann K. Ueber das Vorkommen und Ausmass wirklichen Vitamin A Mangels. *Klin Wchnschr* 18: 875 1939.

55 Ralli, Elaine P., Popper, Emanuel, Paley, Karl and Bauman Eli. Vitamin A and Carotene Content of Human Liver in Normal and Diseased Subjects. Analysis of One Hundred and Sixteen Human Liver. *Arch Int Med* 68: 102 (July) 1941.

56 Clansen and McCoord.<sup>5</sup> Bree c and McCoord.<sup>11</sup> Indqvist.<sup>22</sup>

46 Lasch F. Ueber den Vitamin A Spiegel im Blute bei Leberkrankheiten. *Klin Wchnschr* 17: 1107 1938. Clansen and McCoord.

47 Haig C. and Patek A. J. Jr. Vitamin A Deficiency in Laennec's Cirrhosis: The Relative Significance of the Plasma Vitamin A and Carotenoid Levels and the Dark Adaptation Time. *J Clin Investigation* 21: 309 1942.

48 Ralli, Elaine P., Bauman Eli and Roberts Leslie B. The Plasma Levels of Vitamin A After the Ingestion of Standard Dose. Studies in Normal Subjects and Patients with Cirrhosis of the Liver. *J Clin Investigation* 20: 709 1941. Breece and McCoord.<sup>1</sup>

convalescence may explain previous findings of a high vitamin A level in liver disease.<sup>57</sup> Whether it is due to improved intestinal absorption coinciding with inability of the liver to store the increased amount<sup>58</sup> or to mobilization of the vitamin A from the pathologic sites during the recovery of the liver parenchyma will have to be decided. At any rate the hypervitaminemia is a prognostic sign of recovery.

**Infectious Disease**—Previous reports of low plasma vitamin A levels in patients with various infections<sup>60</sup> and with lobar pneumonia<sup>60</sup> were confirmed by our results. They do not indicate that fever is the only responsible factor.<sup>61</sup> The phenomenon is possibly caused by liver changes secondary to infection or especially lobar pneumonia which interfere with the normal relation between blood and liver.<sup>62</sup> As in liver disease the vitamin A level rises in the recovery stage of pneumonia.<sup>61</sup> The prognostic value of the plasma vitamin A level, especially when repeatedly determined, is evident: a rise indicates improvement, constant zero levels point to a fatal outcome. In infections and pneumonia, as in liver disease, the vitamin A/carotenoid ratio does not indicate a disturbed conversion of carotene as the cause of the low vitamin A levels. In pneumonia the carotenoid level is also reduced, probably because of reduced food intake.

**Debilitating Diseases**—Low vitamin A levels are found not only in specific absorption impairment, liver damage or infections but also in other debilitating conditions characterized by general malaise and severe sickness.<sup>64</sup> In these the low plasma vitamin A levels are probably caused by a combination of impaired absorption and reduced nutrition and liver damage among other factors. Clinically the vitamin A level may be here of value to indicate the general condition.

**Renal Disease**—High plasma vitamin A levels in patients with renal disease seem peculiar but are reported also by others.<sup>6</sup> They are puzzling since, in contrast to normal persons, patients with kidney damage excrete vitamin A in the urine<sup>66</sup> and since the liver depots are low in vitamin A.<sup>67</sup> In renal disease, vitamin A is also found morphologically in the kidney parenchyma.<sup>68</sup> Furthermore, although impairment of the intestinal absorption of vitamin A might be expected in renal disease, we found in many instances a normal

or better than normal absorption.<sup>60</sup> This paradoxical behavior of vitamin A in kidney disease resembles that of cholesterol, the blood level of which is also increased despite its being excreted in the urine and deposited in the kidney. Further investigations on the intestinal absorption of lipids in kidney disease and on the influence of the renal tubules on the blood lipid concentration<sup>70</sup> are indicated.

Also during pregnancy and especially in its later stage, the plasma vitamin A level is low.<sup>71</sup> Recently the conditions in pregnancy have been thoroughly investigated.<sup>72</sup>

From this comment it is evident that low plasma vitamin A levels are found in a variety of diseases independent of the nutritional intake. In pneumonia or in acute hepatitis the plasma vitamin A level may drop in a matter of days. Avitaminemia, which could be considered as functional avitaminosis A,<sup>10</sup> may thus develop rapidly without any relation to a disturbed nutritional intake. Possibly a similar temporary functional avitaminosis A may occur, despite normal nutritional intake, in persons (for instance members of the armed forces) exposed to great exhaustion and extreme climatic conditions, which may likewise disturb the normal relation between liver and plasma vitamin A.

#### SUMMARY AND CONCLUSION

The clinical significance of the plasma vitamin A determination in diseases of the adult is discussed on the basis of statistically evaluated examinations and on perusal of the literature. Under physiologic conditions and with normal nutrition, the vitamin A level is constant at certain times of the day and on consecutive days. Aberrations of the plasma vitamin A level therefore, assume significance. In liver disease the plasma vitamin A level is sharply lowered, often to zero. The reduction parallels the degree of liver damage and not the degree or type of jaundice. In the course of recovery the plasma vitamin A returns to normal or even high levels. The vitamin A determination may help, therefore, in the diagnosis and prognosis of liver disease. The reduction of the vitamin A level in liver disease is due partly to impaired intestinal absorption and partly to disturbed release of vitamin A from the liver, both in turn depending on the degree of liver damage. In infection the plasma vitamin A level is reduced, especially in lobar pneumonia, zero levels being found usually during the toxic stage of the disease. Repeated determinations of the vitamin A level are of prognostic value. The plasma vitamin A level is also lowered in various other conditions (e.g. anemia, gastrointestinal carcinoma), especially in severely sick patients. The reduction of the plasma vitamin A level in the latter renders it a nonspecific index of the general condition. In kidney disease the vitamin A level is often much increased. Hypovitaminemia A may rapidly develop and is in this country more commonly caused by processes within the body than by faulty nutrition.

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## Clinical Notes, Suggestions and New Instruments

### AMINOPHYLLINE DEATHS

GEORGE ADAMS MERRILL M D BROOKLYN

During the past year the use of aminophylline intravenously in cases of cardiac failure and in bronchial asthma when epinephrine and other remedies are ineffectual has been frequently reported. That the results are often most satisfactory is true. That its use is also not without danger is also true, as a recital of the following cases will demonstrate.

#### REPORT OF CASES

M G, a man aged 52, whose previous history was irrelevant was pronounced normal as the result of a hospital check-up, including an electrocardiogram, twelve months ago. At 2 p m, while finishing luncheon, he was seized with severe precordial pain. The hotel physician on examining him made a diagnosis of acute coronary closure, and, feeling that he was too ill for removal to a hospital, had him carried to a room, where he was put to bed. When I saw him, at 6 p m, he was still in profound shock, the blood pressure was 100/50 and the heart sounds were faint, with the suggestion of a pericardial murmur. There were signs of beginning pulmonary edema. The usual treatment, including morphine and oxygen by the tent method, had been instituted. A 10 cc vial containing 0.25 Gm of aminophylline was aspirated into a syringe and the needle inserted into the antecubital vein. About 4 cc. had been slowly injected when an expression of pain came over the man's face, his arms were brought up across his chest, almost immediately his respirations stopped, and after a few fluttering sounds at the cardiac area his heart also ceased to beat.

C N, a man aged 73, admitted to the King's County Hospital on Feb 16, 1942, had had numerous attacks of bronchial asthma over a period of years. There was no history of dyspnea on effort, no skin edema or precordial distress. The admission diagnosis was status asthmaticus. The blood pressure was 200/90, the pulse rate 120, the heart sounds of poor quality, no murmurs were heard. The examination of the lungs showed the typical signs of bronchial asthma. A bedside x-ray examination showed bronchiectasis. Digitalization was started. Epinephrine 0.5 cc. gave relief at first and was repeated every four hours. After four doses it was no longer effectual. Enclosure in an oxygen tent gave no relief. Finally at 3 p m on February 17 0.25 Gm of aminophylline dissolved in 10 cc of 10 per cent dextrose was injected slowly into the antecubital vein by the resident physician. Within thirty seconds his respiration ceased and no heart sounds could be heard. Intracardiac epinephrine 1 cc was used. The patient was pronounced dead at 3 05 p m.

M H, a man aged 70, admitted to the Caledonian Hospital with a history of acute cardiac decompensation, had never shown any sign of heart disease and had not consulted a doctor for years. A 2 meter x-ray plate showed a cor bovinum. An electrocardiogram disclosed left ventricular preponderance. Blood chemistry, blood count and urine examination were normal. The usual treatment for cardiac failure was instituted without improvement, as described in the preceding cases. The patient died almost immediately as before described.

#### COMMENT

I have seen syncope, cardiac palpitation and extreme dilatation of the pupils in a number of young patients suffering from status asthmaticus and treated with intravenous aminophylline. The symptoms were only temporary.

Since I wrote the foregoing 2 other cases of sudden death after the use of intravenous aminophylline have been reported to me verbally by an intern who was 'riding bus' at another Brooklyn hospital. The patients were treated at home on

ambulance calls. In each case bronchial asthma was diagnosed, aminophylline was administered as described, and death was immediate. No particulars are at hand on these cases.

#### CONCLUSIONS

While not condemning the use of aminophylline intravenously, I feel that it should be used only when safer drugs have failed to give relief. Our hospital rule is that it may be ordered only by one of the attending staff or by the resident physician, that not more than 0.24 mg may be used and that it be dissolved in 50 cc of 5 per cent dextrose and given by the gravity method over a period of ten minutes, during which time the doctor should stand by.

The cause of death in these cases is unknown and will remain so until autopsies are obtained, which might clear up the question. The suddenness of the death resembles that seen when epinephrine hydrochloride has been given undiluted intravenously, in which case death has been due to ventricular fibrillation.

816 Ocean Avenue

### ACTINOMYCOSIS TREATED WITH SULFADIAZINE

LIEUTENANT COLONEL WILLARD F HOLLENBECK  
MEDICAL CORPS ARMY OF THE UNITED STATES  
and

LIEUTENANT DAVID TURNOFF  
MEDICAL CORPS ARMY OF THE UNITED STATES

Any agent that influences the course of actinomycosis favorably is worthy of note. The benefit achieved by sulfadiazine in a case under our care seemed so remarkable that we were moved to place it on record.

#### REPORT OF CASE

A Negro soldier aged 38 who had been inducted into the U S Army on Nov 10, 1942 was transferred to the Moore General Hospital, Swannanoa, N C, on Feb 4, 1943 from a station hospital where he had been hospitalized from Dec 24, 1942 to Jan 26, 1943 and again from January 30 to February 4.

On admission to the Moore General Hospital he gave the history that in November 1941 he had developed a small lesion on the left side of his jaw. This lesion enlarged in a few days until a full blown abscess was present. The patient consulted

#### Blood Count, Sedimentation Rate and Sulfadiazine Level

Date	Red Blood Cells	Hemo globin %	White Blood Cells	Poly morpho nuclears %	Sedimen tation Rate Mm in 1 Hour	Blood Sulfadiazine Level Mg per 100 Cc
2/ 5/43	4 610 000	90	6,850	72	23	
3/ 2/43	3,390 000	72	13 400	72		2.3
3/ 8/43	4 030 000	85	15,800	79		1.80
3/11/43	4 400 000	90	14,500	73		3.4
3/18/43	4 640 000	95	12 250	76		0.4
3/25/43	3 630 000	80	9 700	69		4.8
3/30/43	4,010 000	98	8,900	71		4.0
4/ 5/43	4 610 000	90	16,850	82	14	7.1
4/12/43	4 070 000	80	9 760	60	11	5.6
4/23/43	4 760 000	90	10 250	83	14	4
5/ 1/43	4 290 000	80	13 800	67	23	5.0
5/15/43					10	3.4
5/18/43	4 830 000	90	13 000	72	12	1.8
5/19/43	4,970 000	90	15 400	71		4.4
6/ 3/43	4,000 000	90	17 900	70		5.7
6/11/43	4 790 000	90	12 600	74	4	0

Treatment started Feb 19 1943 and discontinued June 30 1943

a dentist who felt that his teeth were responsible and therefore extracted all the teeth in the left lower jaw. This procedure did not seem to influence the abscess but soon it opened spontaneously and some sanguineous purulent material escaped.

Drainage continued for several weeks and finally healed with scar formation.

Shortly afterward the same process recurred in the adjacent healthy skin. An abscess gradually formed, ruptured and drained, finally healing with the formation of a scar. This chain of events occurred over and over again, continuing until his last hospital admission, when he complained of diffuse involvement of the skin of the anterior half of his neck extending on to his chin and jaws.

Both admissions to the station hospital occurred because of the spontaneous rupture of an abscess such as described. In both instances the lesions healed in the pattern outlined.

In his past history he had suffered only with measles and mumps in childhood. He had complained of "stomach trouble" and "nerves" for many years. He stated that he had not had any serious illnesses, operations or injuries.

Prior to induction into the Army he worked at odd jobs. He said that he had not been engaged in any work about a farm, garden, stable or tanning factory. He also did not have the habit of chewing on straw. The patient had lived exclusively in Brooklyn since 1925.

The patient was 68 inches (173 cm) tall and weighed 142 pounds (64 Kg). The skin on both cheeks was involved by a disease process continuously with the skin of the anterior neck extending down roughly to the level of the larynx and laterally to the mandibular ramus. The area described was altered by various sized abscesses ranging up to 3 cm in diameter. Interspersed were multiple small sinuses which delivered a dirty yellow pus to the surface. The intervening skin appeared unhealthy, doughy and heavily scarred. The lesions were tender to palpation.



Fig 1—Appearance before treatment with sulfadiazine

The diagnosis was easily established by the laboratory finding of ray fungi (*Actinomyces hominis*) on direct smear and culture. Two independent examinations confirmed this observation.

On admission the blood count revealed 4,610,000 red blood cells and 6,850 white blood cells per cubic millimeter. The hemoglobin was estimated to be 95 per cent. A Schilling count of 100 white cells was normal. The initial urine examined was light yellow, slightly cloudy and neutral in reaction with a

specific gravity of 1.027. No sugar was present but a faint trace of albumin was reported. On microscopy 5 to 7 red blood cells and 1 to 3 white blood cells per high power field were noted. The sedimentation rate was 23 mm in 60 minutes.

With the diagnosis of actinomycosis established, the patient was given sulfadiazine by mouth in 1 Gm doses every four



Fig 2—After treatment with sulfadiazine

hours. About one week later the quantity was cut to 1 Gm. four times a day. This dosage was maintained for the duration of the treatment. Thus he received 500 Gm of sulfadiazine continuously administered over one hundred and twenty consecutive days beginning Feb 12, 1943.

It was fully two weeks before any noticeable improvement in the lesions could be observed. As a matter of fact cessation of the drug was therefore considered. However, in the ensuing weeks the lesions melted away. Not only did the abscesses disappear but the scars actually dissolved, leaving the skin practically in a normal condition.

The administration of the drug apparently had no ill effects. The patient maintained his appetite and weight. The urine, blood and sulfadiazine levels were checked at frequent intervals. The course of the blood count, sedimentation rate and sulfadiazine can be observed in the accompanying table. The highest blood sulfadiazine level was 71 mg per hundred cubic centimeters. No anemia resulted, but a mild leukocytosis occurred reaching as high as 16,850 white blood cells with 82 per cent polymorphonuclear leukocytes. The urine, which contained a trace of albumin, 5 to 7 red blood cells and 1 to 3 white blood cells per high power field on admission, became entirely normal during the administration of the drug, although on several occasions the urine contained some sulfadiazine crystals.

The patient received no other medication or treatment. He was given a regular diet without benefit of iron, liver or vitamins.

#### COMMENT

When it was established that the patient had actinomycosis, the question arose as to what form of therapy should be instituted. Since there had occurred in the recent literature encouraging reports on the use of sulfanilamide and sulfapyri-

dine<sup>1</sup> in this condition, it seemed a natural sequence to use the most recent available sulfonamide, namely sulfadiazine

While organizing the records of this case for reporting, there appeared in the literature<sup>2</sup> the first recorded cases of actinomycosis to be treated with sulfadiazine. This article, by Lyons and his co-workers, is based on an experience with 5 cases of actinomycosis in all of which surgical treatment was supplemented by sulfonamide. The first patient received sulfathiazole and sulfanilamide. The others were given sulfadiazine. All were benefited by the treatment. Emphasized were the need for long continued drug therapy and the ever present danger of recurrences.

There can be little doubt that in our case sulfadiazine was the critical influence, resulting in a clinical remission of symptoms. There had been progressive involvement of the skin for over a year until sulfadiazine abruptly terminated the disease. Nevertheless we are fully aware that 1 case proves nothing. Furthermore, it is to be noted that it was the cervicofacial type of actinomycosis, which as Morton<sup>3</sup> indicates is the most common and gives by far the best prognosis. The abdominal cases show a much greater mortality, and the thoracic cases have by far the poorest prognosis, the mortality approaching 100 per cent.

Another query raised is that the sulfonamides remove secondarily invading bacteria allowing the natural defenses to combat the fungi more effectively. In our case the laboratory obtained pure cultures of the ray fungus from the discharging lesions. Nevertheless this question is still unsettled.

One other feature of this case appears worthy of mention. A moderate dose of sulfadiazine was administered daily for four months, and at no time was any untoward effect observed on the kidneys, the blood or the health in general.

## Council on Pharmacy and Chemistry

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT  
AUSTIN E. SMITH, M.D., Secretary

### USE OF AMPHETAMINE SULFATE IN CONTROL OF OBESITY

Amphetamine sulfate has been accepted for inclusion in New and Nonofficial Remedies with well defined uses such as the treatment of narcolepsy and certain depressions accompanying psychopathic conditions. The Council has frequently warned against the promiscuous use of such active agents at the same time recognizing their value.

As a result of recent articles appearing in a well known lay publication as well as in some scientific journals, the Council's office has been receiving inquiries concerning the use of amphetamine sulfate in the control of obesity. This office has been further informed that mixtures (not accepted by the Council for New and Nonofficial Remedies) containing amphetamine sulfate are being exploited for use in obtaining weight reduction. The arguments for such use of the drug were considered by the Council, and the conclusion was reached that whatever effectiveness the drug might have might possibly be due to

undesirable properties. In view of the dangerous effects which might come from the exploitation of this drug for use in obesity the Council, for the information of physicians desiring to go on record as disapproving general recognition of claims for such use of amphetamine sulfate. The Council will follow closely the use of amphetamine sulfate in the treatment of obesity and will make available another statement if there should appear sufficient information to justify such action.

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary

**ALLERGENIC PREPARATIONS** (See New and Non-official Remedies, 1943, p. 1)

The following preparations have been accepted

SHARP & DOHME, INC., PHILADELPHIA

**Lyovac Pollen Extracts-Mulford**

The following lyovac pollen extracts-Mulford are supplied in complete treatment packages of four vacule ampul-vials containing the lyophilized extract, and four ampuls, each containing 2 cc of sterile distilled water with 0.35 per cent phenol as preservative, also in supplementary treatment packages of one vacule ampul-vial containing the lyophilized extract, and one ampul containing 2 cc. of sterile distilled water with 0.35 per cent phenol as preservative. After restoration of the lyophilized extract to the fluid state each of the four vacule ampul-vials in the complete treatment package contains 2 cc of pollen extract solution providing, respectively, 400, 4,000, 20,000 and 20,000 pollen units per cubic centimeter. Similarly the single vacule ampul-vial in the supplementary treatment package contains 2 cc of pollen extract solution providing 20,000 pollen units per cubic centimeter.

*Timothy Lyovac Pollen Extracts: Grass Mixture (timothy June grass orchard grass sweet vernal grass and red top 20 per cent each) Lyovac Pollen Extract, Ragweed (high ragweed and low ragweed 50 per cent each) Lyovac Pollen Extract*

Matured pollens are thoroughly dried separated from extraneous material and defatted by ether extraction. The defatted pollen is extracted for twenty-four hours at a temperature of 5°C with a buffered saline solution containing dibasic sodium phosphate and acid potassium phosphate and adjusted to a pH of 7.4. The extracts are sterilized by candle filtration and standardized on the basis of their protein nitrogen content. When adjusted to the desired strength the pollen extracts are filled into vacule ampul-vials and processed therein. By means of the lyophile process the freshly prepared extracts are rapidly frozen at sub-zero temperatures dehydrated under vacuum and preserved under vacuum in the market container. The extracts are standardized on the basis of their protein nitrogen content and their potency is expressed in terms of the pollen unit which is equivalent to 0.000005 mg of protein nitrogen.

**THIAMINE HYDROCHLORIDE** (See New and Non-official Remedies 1943, p. 590)

The following dosage forms have been accepted

WALKER VITAMIN PRODUCTS, INC. MOUNT VERNON, N. Y.

**Solution Thiamine Hydrochloride** 15 cc. and 60 cc. bottles 100 international units vitamin B<sub>1</sub> per drop

**Tablets Thiamine Hydrochloride** 1 mg., 3 mg., 5 mg. and 10 mg.

**ERYTHRITYL TETRANITRATE TABLETS** (See New and Nonofficial Remedies 1943 p. 306)

The following dosage form has been accepted

BURROUGHS WELLCOME & CO., INC., NEW YORK

**Tablet Erythrityl Tetranitrate** 16 mg., 32 mg. and 65 mg.

**DEHYDROCHOLIC ACID** (See New and Nonofficial Remedies, 1943, p. 322)

The following dosage form has been accepted

BURROUGHS WELLCOME & CO., INC., NEW YORK

**Tablet Dehydrocholic Acid** 0.243 Gm.

**OLEOVITAMIN A** (See New and Nonofficial Remedies 1943 p. 587)

The following product has been accepted

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

**Vitamin A Capsules** Each capsule contains 25,000 U. S. P. units of vitamin A derived from natural fish liver oils

1 Reports on sulfonamide therapy in actinomycosis

Walker Oliver Sulfanilamide in the Treatment of Actinomycosis Lancet 1 1219 (May 28) 1938

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Wilkinson E. E. Actinomycosis Treated with Sulfanilamide J. Pediatr. 18: 805 (June) 1941

2 Lyons Champ Owen Cora R. and Ayers William B. Sulfonamide Therapy in Actinomycotic Infections Surgery 14 99 (July) 1943

3 Morton H. S. Actinomycosis Canad. M. A. J. 42 231 (March) 1940

# MEDICINE AND THE WAR

*In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession*

## ARMY

### NEARLY FIVE HUNDRED MEDICAL AND DENTAL OFFICERS GIVEN COURSE AT THE UNIVERSITY OF PENNSYLVANIA

During the past year the University of Pennsylvania, Philadelphia, has given a series of thirty-two courses to nearly five hundred medical and dental officers of the Army, at the request of the Surgeon General of the United States Army. The courses were offered under the administrative supervision of the Graduate School of Medicine of the university, of which Dr Robin C. Buerki is dean.

In order to conduct these courses a group of 124 faculty members was formed from Hahnemann Medical College, Jefferson Medical College, the School of Medicine of Temple University and the Graduate School of Medicine, the School of Medicine and the Evans Dental Institute of the University of Pennsylvania. To this group were added the surgeons of the hospitals of these medical schools, as well as the Lankenau Methodist, Oncologic, Pennsylvania, Philadelphia General, Presbyterian and Samaritan Hospitals and the Evans Dental Institute.

The fundamentals of basic surgery, surgery of the extremities and of the thorax, plastic and maxillofacial surgery, together with anesthesiology, bacteriology and clinical pathology were covered in the courses. Most were of six weeks duration, but twelve weeks was devoted to anesthesiology and clinical pathology. All officers spent their first two weeks in the study of basic and fundamental surgery and the last four weeks in one of the special fields to which they had been assigned by the Surgeon General.

### PROMOTIONS FOR ARMY NURSES

Increased grades have been allotted to positions now held by members of the Army Nurse Corps, which will permit promotions for about one third of the approximately 33,000 members of the corps. Recommendations for promotions will be made by chief nurses and commanding officers. Authorization for the promotions is effective immediately. Formerly, in a hospital unit which required one hundred nurses only one captain and seven first lieutenants were authorized. The new plan will authorize a lieutenant colonel, a major, three captains and thirty-one first lieutenants for the same organization. The position held by a nurse in charge of a hospital with a minimum capacity of 3,000 beds will be such as to carry the relative rank of lieutenant colonel, at a hospital of 750 bed capacity the relative rank of major, and that of 500 beds but less than 750 the relative rank of captain. Regardless of capacity of the hospital, the nurse in charge will have the relative rank of lieutenant colonel if the hospital has enrolled, in addition to the authorized nurse strength, twenty-five or more nurses studying in one or more specified courses. Directors of the Army Nurse Corps in major theaters of operations will have the relative rank of lieutenant colonel, in minor theaters of operations and defense commands the relative rank of major. The designation of a theater as major or minor allotment of nurses is made on the basis of its medical requirements. The relative rank of captain for dietitians and physical therapy aides in charge of departments in 3,000 bed hospitals or in hospitals conducting courses for students is covered by the authorization.

### ELEVENTH CLASS OF AVIATION PHYSIOLOGISTS

Graduation exercises at the School of Aviation Medicine, Randolph Field, Texas, for the eleventh class of Aviation Physiologists was held on October 16. Brig Gen Eugen G. Reinartz, U. S. Army, is commandant of the school. The course in aviation physiology is of five weeks' duration. Among those graduating were the following officers of the medical corps:

Capt. Carroll L. Conley, Baltimore  
1st Lieut. John W. Bricker, Cleveland  
1st Lieut. Bernard Gomberg, Chicago  
1st Lieut. Oscar D. Ratnoff, Boston  
1st Lieut. Jack C. Shrader, Indianapolis  
1st Lieut. Oscar Sugar, Chicago

In addition there was one graduate of the Medical Corps of the Argentine army, 1st Lieut. Raul Marty, Buenos Aires, Argentina.

### LIEUT. ROY F. DENT JR. AWARDED LEGION OF MERIT

Lieut. Roy F. Dent Jr. was awarded the Legion of Merit for "exceptionally meritorious conduct in the performance of outstanding services in North Africa during the period Dec. 26, 1942 to May 7, 1943. In addition to performing his normal assigned duties in a superior manner, Lieutenant Dent assembled and installed all of the x-ray equipment in his hospital and adapted this equipment to operate on electric current available locally. Later he adapted, adjusted and corrected the installation of all equipment within the Mediterranean base section. Thus he made possible the use of valuable and much needed equipment which otherwise would have remained idle. Also Lieutenant Dent by his ingenuity and technical skill improvised helpful mechanical equipment and kept in repair and operation many items of electrical equipment which have been of material assistance in the operation of the hospital. By his resourcefulness, technical knowledge and untiring efforts he has greatly facilitated and expedited treatment and recovery of the sick and wounded." Dr. Dent graduated from Northwestern University School of Medicine, Chicago, in 1942 and entered the service in March 1942.

### RIGID TRAINING TO PREPARE NURSES FOR DUTY IN COMBAT AREAS

The War Department announced recently that the four week basic training courses for nurses after their entry into the Army Nurse Corps will include digging foxholes, marching with full packs and learning the approved Army technique for crawling over battle terrain. Col. Florence Blanchfield, superintendent of the Army Nurse Corps, in emphasizing the importance of the basic training program of the corps, said that "army nurses must know not only how to care for others but also how to take care of themselves." The course is designed to orient the newly commissioned army nurse and to give a general background of information concerning the Army and its organization, and in particular the organization and function of the Medical Department and the Army Nurse Corps. Self protection from enemy shelling and bombardment is essential, particularly to the army nurse serving overseas near front lines.

or in the rear or evacuation areas. Teaching self protection, however, is not the only purpose of the basic training. Newly commissioned nurses are taught the principles and methods of medical field service and army nursing in order that they may perform efficiently those duties to which they may be assigned.

The basic training program given at nurse training centers in each of the Army's nine service commands in the United States includes training in individual defense against chemical attack and against air, parachute and mechanized attack. The army nurse learns how to use a gas mask, how to dig a foxhole quickly, how to conceal herself by camouflage and how to advance under a barrage of enemy shell fire. Instruction also includes training in sanitation and control of disease, fly and mosquito control, food inspection and mess sanitation, field water supplies and purification, waste disposal, first aid, care and management of mental patients, treatment of chemical casualties and other medical phases of army life.

### PRISONERS OF THE JAPANESE

Capt. Leo Schneider of Portland, Ore., recently sent word to his wife saying that he was unharmed and in good health and has been a prisoner of the Japanese since the fall of the Philippines. Captain Schneider graduated from the University of Oregon Medical School in 1935 and entered the service in January 1941.

Capt. John A. Marsico, formerly of Lorain, Ohio, recently sent word to his wife that he was captured by the Japanese on

May 7, 1942 and is now interned at Osaka as a doctor in a Japanese prison camp. Dr. Marsico graduated from the Ohio State University College of Medicine, Columbus, in 1930 and entered the service on Aug. 1, 1940.

Word has recently been received that Major John W. Raulston, who was stationed at Fort Stotsenburg, Philippine Islands, just prior to the war, has been missing since the fall of Bataan and is a prisoner of war by the Japanese. Dr. Raulston graduated from the University of Tennessee College of Medicine, Memphis, in 1930. He has been in the service since July 1, 1936, at which time he was commissioned a first lieutenant in the regular army of the United States.

### ARMY PERSONALS

According to the *Army and Navy Journal* of September 25, command headquarters at Randolph Field, Texas, has announced the appointment of Col. Ernest F. Harrison, M. C., as surgeon for the A. A. F. Central Flying Trauung Command at Randolph Field.

Dr. Margaret M. Ross of Rumford, R. I., was the first woman doctor in Rhode Island to join the armed forces. She was sworn in as a captain in the U. S. Medical Corps in October and subsequently assigned to the Post Hospital at Fort Des Moines, Iowa, and is now eligible for duty on any war front. Dr. Ross graduated from Tufts College Medical School, Boston, in 1922.

## NAVY

### TUBERCULOSIS SURVEY

The Bureau of Medicine and Surgery, Washington, D. C., announced on November 29 that the Navy has now adopted a new rapid and reliable method of giving x-ray examinations to all recruits for the purpose of discovering and weeding out those with tuberculous symptoms. Under the new system of photofluorographs using 35 mm. motion picture film an average of 240 pictures an hour can be made at a cost of 1 cent per person. When a tuberculous condition is suspected, the person is recalled for further diagnostic examination including a standard 14 by 17 inch x-ray film. This new method of screening persons permits speedy examinations with a low rate of error. As many as 3,200 cases have been done in one day and 41,989 examinations a month.

As a result of the facts demonstrated by this survey, as well as the Navy's general experience with the 35 mm. fluorograph or chest films, it is felt that this system is inexpensive, reliable and accurate for the purpose of mass tuberculosis checks. Use of the miniature negatives reduces the necessary filing space for health records to a hundred and twenty-fifth that required under old methods, it lessens the chance that tuberculosis will spread within the naval service, it provides a proved method by which similar inexpensive preventive surveys can be made among the civilian population and it gives patients with tuberculosis a chance to overcome the disease by discovering its presence in the early stages. Work is still needed to perfect the photofluorographic process so that the size of the image will be increased without increasing the size of the film frame.

### REAR ADMIRAL LUTHER SHELDON JR. OBSERVES MEDICAL FACILITIES

Rear Admiral Luther Sheldon Jr., assistant chief of the Bureau of Medicine and Surgery, recently returned to Washington after a four months tour of observation of medical facilities in the United Kingdom, North Africa, Sicily, West Africa, Brazil and the West Indies. Dr. Sheldon said he was satisfied with the adequacy and function of the medical installations which he visited and that he was greatly impressed by the high morale existing in the naval medical personnel almost all of whom expressed a desire to remain at their posts until the job is finished. Existing medical facilities, and those which are now in the process of completion, will be entirely adequate to meet any contingency, he said.

### LIEUT. COMDR. SAMUEL A. ISQUITH AWARDED LEGION OF MERIT

The Legion of Merit was awarded to Lieut. Comdr. Samuel A. Isquith, formerly of Brooklyn, for outstanding services as a medical officer aboard the heavy cruiser *Vincennes*, sunk in an engagement with Japanese forces in the Solomons area in August 1942. The award was accompanied by a letter from Frank Knox, Secretary of the Navy, which said in part that Dr. Isquith, "surmounting all the obstacles presented by battle conditions, tirelessly devoted himself to providing the injured with skilled medical care, remaining at his dressing station until the sinking ship had been almost completely abandoned. Without respite from his exhausting task he continued administering to the wounded on a life raft in the open sea, aboard a rescuing destroyer and later on a transport, until ordered to rest by his commanding officer." Dr. Isquith graduated from the Long Island College of Medicine, Brooklyn, in 1921, and entered the service in February 1942.

### RETIRED PHYSICIAN NOW TESTS GYRO COMPASSES

A retired physician, who served as a major in the Army Medical Corps in World War I, is now taking the pulses and reading the clinical charts of delicate direction-finding machines for the Navy. He is Dr. James V. W. Boyd of Springfield, Mass., who retired from medical practice ten years ago. Employed at the Packing Machine Company, which manufactures gyro compasses, Dr. Boyd takes the vital readings as gyro compasses are put through their final tests. Dr. Boyd graduated from Columbia University College of Physicians and Surgeons, New York, in 1894.

### SECTION OF SANITARY ENGINEERING

The Bureau of Medicine and Surgery, Washington, D. C., recently announced that a Sanitary Engineering Section has been authorized in the Division of Preventive Medicine. The functions of this new section shall be to advise on the design, construction, operation and maintenance of water supplies, water treatment plants, sewerage systems, sewage treatment plants, general waste disposal and collateral facilities, as well as the engineering phases of insect and rodent control. These functions are to be performed from the perspective of preventive medicine and public health.



# PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

## HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their Procurement and Assignment Service quotas for Jan 1, 1944 or later

(Continuation of list in THE JOURNAL, December 18, p 1055)

### CONNECTICUT

Hartford Municipal Hospitals, Hartford Capacity, 349, admissions, 4,153 Mr William J Ryan, Superintendent (5 interns)

### INDIANA

Indiana University Medical Center, Indianapolis Capacity, 643, admissions, 9,706 Mr J B Howe Martin Administrator (5 assistant residents, 1 resident—obstetrics, orthopedics, pathology, cardiology)

### KANSAS

University of Kansas Hospitals Kansas City Capacity, 350 admissions 6,599 Dr J Harry Jewett, Medical Director (resident—radiology, 4 F applicant, March)

### MARYLAND

Mercy Hospital, Baltimore Capacity 338 admissions, 7,569 Sister M Celeste, Superintendent (2 interns, 1 resident)

### MISSOURI

St Louis City Hospital St Louis Capacity, 1,127 admissions, 15,013 Dr Leo J Wade, Medical Director (resident—pathology)

### NEW JERSEY

Newark Memorial Hospital, Newark Capacity, 165, admissions, 2,896 Miss Catherine Guenther, R.N., Superintendent (2 interns, 1 resident—mixed)  
Saint Joseph Hospital, Paterson Capacity, 468, admissions, 9,711 Sister Anna Rila, R.N., Superintendent (8 interns)

### NEW YORK

State Institute for the Study of Malignant Diseases, Buffalo Capacity, 107 admissions, 2,063 Dr Burlon T Simpson, Medical Director (resident—malignant diseases)  
Sydenham Hospital, New York Capacity, 205 admissions 4,260 Mr Emil Greenberg, Executive Director (2 vacancies)  
New York Hospital—Westchester Division, White Plains Capacity, 350 admissions, 361 Dr Clarence O Cheney, Medical Director (3 residents—psychiatry)

### PENNSYLVANIA

Mercy Hospital, Altoona Capacity 180, admissions, 3,867 Mother Mary Otilia, Superintendent (3 interns)

### VIRGINIA

Hospital of St Vincent de Paul, Norfolk Capacity 250, admissions, 8,271 Sister Inez, R.N., Superintendent (3 interns)

### WASHINGTON

King County Hospital, Unit No 1 (Harborview), Seattle Capacity, 505, admissions, 12,659 Dr W W Schwabland, Acting Medical Superintendent (assistant resident)

### WISCONSIN

Wisconsin State Sanatorium, Statesan Capacity, 241 admissions 113 Dr Richard H Schmidt Jr, Medical Superintendent (resident—tuberculosis)

## MISCELLANEOUS

### PUBLIC HEALTH UNDER HITLER

According to *Le Petit Parisien* of September 14 the quota of insulin for the month of September has been reduced by three as compared with that for the month of August

The Chief Public Health Directorate has ordered the inoculation against typhus of all persons engaged in the struggle against this disease, according to *Zora* of September 19 The entire people will not be inoculated against typhus because it is very hard to obtain serum The directorate, has, however, ordered a delousing campaign in all regions threatened by the disease before the winter sets in

According to *Dagens Aften* of October 10 the Germans have demanded at least 200 Norwegian nurses for hospital service in Germany or other occupied territories In some cases they have promised to consider the request of the nurses to serve in Germany itself It is supposed that the increased air offensive against Germany has caused this demand

According to DNB of October 12, during the past few days the reich leader of pharmacists, SA-Gruppenfuhrer Schmierer, was able to celebrate his tenth anniversary as leader of the German pharmacists' profession During this important period he was able to merge German pharmacists into a firm and uniform professional community, to tackle a great many questions of the profession with exemplary energy, to solve them and to give the members of his profession a thorough knowledge of the wealth of ideas of national socialism It is chiefly due to him and to the devotion of all those who have a part to play in the supply of medicaments that the civilian population is still able, in the fifth year of the war, to obtain the medicinal products it requires

Current of October 3 states that the Ministry of Labor, Health and Social Services has been authorized to send the pathologist Dr Al (P) Birule as delegate to the International Medical Commission of Inquiry appointed to investigate the murders committed at Vintsia in the Ukraine

NPD, October 20, reported that, besides the hospitals for foreign workers in the reich which are attended by camp doctors, sick bays are now being established where foreigners who are billeted in private homes are taken care of On the whole, foreign doctors and dentists and women assistants give treatment to their compatriots Specialists are consulted in cases of serious illness

DPT, Stockholm, October 19, stated that the Germans apparently intend to make Denmark a convalescent home for homeless Germans from the industrial districts An extensive immigration of German civilians is therefore expected during the coming winter The Germans have already bought large villas and other buildings which have been converted into homes for German women and children, but of late they have simply been requisitioning a great number of Danish schools and premises for German soldiers or German families who have been rendered homeless by bombing Several Danish factories have already received orders from such places As Danish blanket firms have been ordered to deliver blankets, a blanket factory at Odense was seriously damaged recently by sabotage. Several timber firms, for instance one large firm at Naestved, and the contractors Nicolaisen and Nielsen at Copenhagen south harbor, have been ordered to supply wooden barracks from the beginning of September Homeless evacuated Germans are supplied with furniture which has been confiscated from Jews who have been arrested

According to the October 12 (Vienna edition) of the *1. öst. kaiserlicher Beobachter* in opening the discussion meeting of the German Society for Internal Medicine the reich health leader, Conti, said that Germany was free from epidemics in this war as never before Not only was this due to preventive measures but it is also the fruit of the work of our scientists, practitioners and all doctors Even the attacks of the Anglo-American terror bombers on German towns have not increased the danger of epidemics We can fortunately state this despite the activity of enemy propaganda, which asserts that typhoid and cholera have appeared in Hamburg The standard of health of the German people in the fifth year of war is even better than during the autumn of 1942

# ORGANIZATION SECTION

## OFFICIAL NOTES

### THE 1944 CHICAGO SESSION

#### The Scientific Exhibit

The Committee on Scientific Exhibit of the Board of Trustees has authorized three special exhibits, which will be presented under the guidance of special exhibit committees.

The special exhibit on fractures will be continued as in former years, showing how to make and store plaster of paris bandages, fractures of the lower end of the radius, fractures of the ankle and emergency treatment of fractures for transportation. The committee consists of Dr Kellogg Speed, Chicago chairman, Dr Frank D Dickson, Kansas City, and Dr Walter E Lee, Philadelphia.

The special exhibit on burns will include both industrial and military phases of the problem. The committee is composed of Dr Stanley J Seeger, Texarkana, chairman. Capt. Ernest W Brown, Bureau of Medicine and Surgery, United States Navy and Capt. Joseph E Hamilton, Walter Reed General Hospital, United States Army.

The special exhibit on anti infective agents will include penicillin, sulfonamides and other new anti infective drugs. Dr

Chester S Keefer, Boston, and Dr Austin E Smith, Chicago, will be in charge of the exhibit.

The sixteen sections of the Scientific Assembly will arrange groups of exhibits as usual. Applications for space should be made to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago 10.

#### DR F H ARESTAD APPOINTED ASSISTANT SECRETARY OF COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The Council on Medical Education and Hospitals announces that Dr Fritjof H Arestad has been appointed to the position of Assistant Secretary.

Dr Arestad, who has been on the Council staff for thirteen years, will be concerned mainly with all hospital activities of the Council including the registry of hospitals, formerly under the direction of Mr Homer F Sanger, as well as with internships, residencies and fellowships.

### CONFERENCE ON EMERGENCY MATERNITY AND INFANT WELFARE

The Children's Bureau of the United States Department of Labor, in response to a resolution adopted by the Executive Board of the American Academy of Pediatrics, called a conference on the emergency maternity and infant care program for the wives and infants of enlisted men in the armed forces in Washington on Dec 10 and 11, 1943. The resolution of the Academy of Pediatrics proposed a conference of official representatives of the service men together with official representatives of the professions actually rendering the service. There were present representatives designated by the American Medical Association, American Hospital Association, U S Public Health Service, American Association of Obstetricians, Gynecologists and Abdominal Surgeons, American Academy of Pediatrics, American Gynecological Society, American Pediatric Society, Committee of Physicians for the Improvement of Medical Care, Association of State and Territorial Health Officers, War Department, Navy Department, Army Emergency Relief, Navy Relief Society, American Red Cross, American Legion and the Washington representatives of five national women's organizations that have supported the legislation. The Children's Bureau also invited the medical and public health members of the Children's Bureau Advisory Committee on Maternal and Child Health Services. Dr Martha M Eliot, associate chief of the Children's Bureau, served as chairman of the conference.

The first day of the conference was given over to a full discussion by the official delegates of the various organizations of the purpose of the emergency maternity and infant care program as provided for in the acts of Congress and the policies under which the program is being administered by the Children's Bureau.

Miss Lenroot, in response to inquiries as to whether the Children's Bureau regarded the program as an emergency program or one that would be continued after the war, stated that since the appropriations made by the Congress for emergency maternity and infant care were national defense items the Secretary of Labor in her regulations governing allotments of these funds had specified that "the term 'emergency' refers to the period of the present war and six months following its termination." Miss Lenroot stated further that "this program has never been presented to Congress to the Bureau of the Budget, or to any one else by the officials of the Chil-

dren's Bureau as anything but an emergency program, 'emergency' meaning the usual definition of the war period and six months following the termination of the war."

In addition, Miss Lenroot stated "The Children's Bureau for many years has been concerned, as you know, with the extension and improvement of services for mothers and children. In that effort we have had a very wide degree of cooperation from the medical profession, partly through the activity that has been developed through the Children's Bureau and the State health agencies and partly through the other forces that have been set in motion over a long period of years. There has been a remarkable reduction in maternal mortality and a very fine reduction in infant mortality. The Children's Bureau was not satisfied with the status quo before the war. We could not be satisfied while approximately 10 per cent of the mothers in this country were delivered by untrained practitioners and while accepted standards of maternity care and infant care were by no means generally applied. Therefore, of course, we are concerned about how we may go forward in the period following the war in efforts to improve the status of maternal and child health in this country."

"However," Miss Lenroot said, "I want to make it clear that this emergency maternity and infant care program was developed in response to need and was in no way a part of any master plan or strategy. It was developed very simply as a measure to meet war need as a result of the experience in the State of Washington and other places and of the evidence of need that was coming to us."

"In the future, when the people of the United States again have more leisure to consider domestic policies, all of us in this room and everybody else concerned will certainly have full liberty to review the experience under this program and under any other program and draw such conclusions as they see fit. Those conclusions will differ for people of all shades of opinion as to public responsibility for medical care will be cooperating in the program. All will have the privilege of reviewing what happened under this program. All of us will have the privilege of free citizens in the United States to form whatever judgments as to the future may seem wise."

The question as to whether the program should be changed from one of payments for medical, hospital and nursing care to one of cash grants to the wives of enlisted men was discussed

fully by representatives of the medical profession and by representatives of the Army, the Navy and the various organizations concerned with dependents of service men. The position of the American Medical Association as being in favor of cash grants was stated by its official representatives. The present policy of Congress in providing for medical, hospital and nursing care instead of cash grants was supported in discussion by the representatives of the service men and by various organizations concerned with the welfare of the wives and infants of the enlisted men and by some of the medical and public health members of the conference. Since the Children's Bureau has no jurisdiction in this matter but must administer the program in accordance with the act of Congress and provide care rather than cash grants, the issue was not acted upon by the conference.

On the second day, therefore, attention was turned to the policies adopted by the Children's Bureau in the administration of the program. A detailed statement of proposed policies was presented to the conference for discussion. The conference made many recommendations which the officials of the Children's Bureau stated would be given full consideration in the revisions now being made of these policies. After full discussion of the question as to whether physicians should be permitted to charge fees in addition to payments made by the state health agencies for services rendered under the program, the conference agreed without dissent that "supplementary payment to the physician by the patient for services authorized should not be allowed."

It will be of interest to physicians that the conference also concurred in the following policies relating to administration of the program:

The hospital, if hospital care is requested, agrees to accept payment only from the state health agency for services rendered under the program and will provide at least ten days care following delivery if accommodations are available and the patient wishes to remain in the hospital.

The hospital will provide special accommodations or services as indicated by the patient's medical condition in return for the per diem payment made by the state health agency.

The wife of an enlisted man may have free choice under the program of all types of available facilities and services including private practitioners, clinics, hospitals and other health facilities that meet the standards established under a state plan for each type of service or facility.

The cost of medical services in a clinic and/or hospital, including maintenance and salaries, where such medical service is provided by staff physicians (such as interns, resident staff and attending physicians employed by or appointed to the staff of clinic or hospital) must be included in the calculation of the cost per clinic visit and the "ward-cost-per-patient-day" (as outlined by the Children's Bureau in the memorandum of Sept. 1, 1943).

Individuals accepted for care under the program will be routinely referred to local public health agencies for the provision of whatever public health nursing services can be made available.

Arrangements will be made to utilize community facilities including appropriate social and health agencies to meet needs other than those provided for under the emergency maternity and infant care program for wives and infants of enlisted men.

There was also discussion with respect to methods of payment and the scope of the service included under the plan. The discussion brought out that it is the intent of Congress that there shall be no financial investigations for eligibility for care under the program. The program provides for complete maternity care and for the consultation of specialists and other special services in accordance with the medical need of the wife or infant.

The revised policies will be distributed to the state health agencies and published in full in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.

At the close of the meeting the following resolution offered by a representative of the Academy of Pediatrics was adopted:

WHEREAS, The free expression of opinion during this conference from official representatives of all interested agencies has been of the greatest value in securing a better understanding and cooperation of those interested in the health and welfare of the wives and infants of the members of our armed forces, and

WHEREAS The Children's Bureau, a governmental agency, has wisely acceded to the request of the Academy of Pediatrics to call this initial conference with the official representatives of the professions actually rendering service under the EMIC plan and to consider the problems arising from the application of this plan, be it

Resolved, That it is the sense of this assembly, in view of the extraordinary benefits which have accrued by a meeting of those representing many thousands of servicemen, health professional and lay organizations that future governmental conferences, national state and local, involving medical services, be similarly composed of the official representatives of professions rendering these services and of the groups receiving them and thereby create in the public interest mutual confidence, cooperation and good will between governmental and medical agencies.

## MEDICAL LEGISLATION

### MEDICAL BILLS IN CONGRESS

*Changes in Status*—S 763 has been approved by the President, amending the Selective Training and Service Act of 1940. It directs the President, among other things, to appoint a commission of five qualified physicians, three of whom shall be civilian physicians not employed by the government, to examine the physical, mental and moral qualification requirements for admission to the armed forces and recommend to the President any changes which it believes can be made without impairing the efficiency of the armed services. The Director of Selective Service, it is contemplated, will cause to be reexamined those men, including those previously discharged from the armed services because of physical disability, who may qualify under any new standards established. This law, too, provides that no individuals shall be called for induction because of their occupations, or by occupational groups, or by groups in any plant or institution, except pursuant to a requisition by the land or naval forces for persons in needed medical professional and specialist categories. H R 2976 has passed the House, providing that during the present war and for six months thereafter the Superintendent and all other members of the Navy Nurse Corps entitled under existing laws to relative rank shall have and be designated by the rank which corresponds to the relative rank originally provided by law for such superintendent and members. This bill has also been favorably reported without

amendment by the Senate Committee on Naval Affairs. H R 3598 has passed the House and Senate, providing supplemental appropriations for the fiscal year ending June 30, 1944. The sum of \$200,000 is provided for the relocation of civilian physicians and dentists. H J Res 208 has been passed by the House, authorizing additional appropriations for the supplying and distribution of farm labor. Medical services may be supplied recruited farm laborers.

*Bills Introduced*—S 1574, introduced by Senator Lodge, Massachusetts, proposes to amend the Pay Readjustment Act of 1942 so as to permit service in the Medical Reserve Corps to be counted for pay purposes. H R 3704, introduced by Representative Rivers, South Carolina, provides pay and allowances for temporary members of the Coast Guard Reserve during periods of disability resulting from injuries sustained or disease contracted in active service during the present war. H R 3806, introduced by Representative Peterson, Florida, would authorize the President to appoint as commissioned officers in the Medical Corps of the Army and Navy, on the respective recommendation of the Surgeon General of the Army or Navy, morticians who are regularly licensed to practice as such in any state or in the District of Columbia. The Surgeon General of the Army and Navy will be authorized jointly and severally to prescribe regulations to govern the recommendations of such morticians for commissions.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

### ALABAMA

**New Director of Industrial Hygiene**—Dr George A Shipman, Atlanta, industrial hygiene physician, Georgia Department of Public Health, has been appointed director of the bureau of industrial hygiene of the Alabama Department of Public Health. Dr Edwin H Place, Montgomery, director of the Alabama unit, will take over the activities of Dr Shipman in the Georgia department.

**Physician Sentenced on Murder Charge**—Dr James Howard Blue, Bessemer, was found guilty by a jury of murder in the second degree and sentenced to fifty years' imprisonment, newspapers reported November 17. Attorneys for the defense announced that motion for a new trial would be filed. At the physician's first trial last September a mistrial was declared. Dr Blue was charged with the shooting of his wife, May 23.

**Changes in Health Officers**—Dr Lowell L Stokes Okmulgee, Okla., U S Public Health Service, has been named in charge of the Lauderdale County Health Unit. The position has been vacant since Dr Julius E Dunn, Anniston resigned almost a year ago to become health officer of Etowah and Calhoun counties (THE JOURNAL, January 16, p 202).—Dr Jesse P Chapman, Selma, has been reappointed chairman of the state executive committee of the Women's Field Army of the American Society for the Control of Cancer.—Dr George E Newton has resigned as health officer of Autauga and Chilton counties to enter private practice in Prattville.

### CALIFORNIA

**Personal**—Dr William McDowell Hammon, assistant professor of epidemiology, George Williams Hooper Foundation, and Herbert G Johnstone, Ph.D., assistant professor of bacteriology at the University of California Medical School, San Francisco, are studying tropical medicine in Central America through the cooperation of the Office of Inter-American Affairs and of the surgeon general of the army.—Dr Edwin B Godfrey, El Centro, has resigned as health officer of Imperial County.

**Governor Appoints Committee on Food and Nutrition**—Governor Earl Warren recently appointed the following members to a statewide committee on food and nutrition: Anthony J Lorenz, California Fruit Growers Exchange, Los Angeles, chairman, Flora Rose, Sc.D., Berkeley, W D Hader, San Francisco, Ray B Wiser, California State Farm Bureau, Berkeley, Dr Langley Porter, San Francisco, Sidney Hoedemaker, Los Angeles, C. J Haggerty, Los Angeles, R. M Hagen, Los Angeles, and Mrs A R Jewel, Napa.

**Physicians Needed**—The Los Angeles County Civil Service Commission announces a nationwide search for qualified applicants for the positions of assistant chief, emergency medical service, paying \$384 to \$450 a month and resident physician, M.D. (orthopedic surgery) and resident physician (pathology) paying \$158 a month. Applicants for any of these positions must not be over 55 years of age. Full information and applications may be obtained from the office of the commission, room 102, Hall of Records, Los Angeles 12. The last day for filing of applications for the positions is January 5. A position for nurse anesthetist paying \$242 to \$286.40 a month is also available.

### ILLINOIS

**Personal**—Dr Thomas A Jones, Zeigler, has been appointed superintendent of the general hospital and head of the medical department of the Southern Illinois Penitentiary at Menard.—Dr Bettv A Nilsson, formerly physician in charge of the Lutheran Hospital at Rajahmundry India and head physician was to leave Rockford in November to return to supervise the institution again. Dr Virgil E. Zigler has been in charge of the institution since Dr Nilsson left in 1940 for a furlough in the United States. Both physicians are with the American United Lutheran Mission.—Drs Fred C.

Hamilton and John Archibald Brown were honored at a meeting of the Kankakee County Medical Society November 9 and presented with fifty year certificates and lapel pins testifying to their completion of fifty years in the practice of medicine.

### Chicago

**Second Hamburger Lecture**—Detlev W Bronk, Sc.D., Johnson professor of biophysics and director of the Eldridge Reeves Johnson Foundation for Medical Physics, University of Pennsylvania School of Medicine, Philadelphia, will deliver the second Walter Wile Hamburger Memorial Lecture January 28, under the auspices of the Institute of Medicine of Chicago. The lecture is made possible by a special fund established by the board of governors of the institute in honor of Dr Hamburger. Dr Bronk will discuss aviation medicine.

**Dr Slight to Head Mental Examinations for Prospective Draftees**—Dr David Slight, president of the Illinois Society for Mental Hygiene on December 13 was named to supervise the new program of mental examinations for prospective draftees in Illinois. Under the plan, medical field agents are to be named for each local board under supervision of Dr Slight. Their job will be to gather medical, social and educational histories of each registrant who is to be ordered to report for induction, with a view toward weeding out mental or nervous incompetents before they get into training.

**Technical Russian**—A course in elementary Russian with special emphasis on the terminology of chemistry, biochemistry, physics and related fields will be offered by the University College of Northwestern University on the Chicago campus next semester. The time for one section has been tentatively set for Tuesday, 8 10 p.m. Additional sections will be offered at other times if there is sufficient demand. The course will include only the necessary minimum of grammar. Exercises in reading and vocabulary building will be based on selected technical material. Supplementary material will be provided for independent exercise in the field of the student's special interest. Prof J G Tolpin, editor of the Survey of Foreign Petroleum Literature, Universal Oil Products Company, is the instructor. He is a graduate of the University of Kiev and has received the master's degree in chemical engineering from Columbia University. He has had wide experience in teaching, research, translating and writing on technical subjects. Further information about the course may be obtained from the University College of Northwestern University.

**Graduate Course on Industrial Hygiene**—A postgraduate course in industrial medicine and hygiene will be presented under the auspices of the committee on industrial hygiene of the state medical society and the Chicago Medical Society. January 4-March 28, under the direction of the division of industrial hygiene of the state department of public health and the University of Illinois College of Medicine. The class will be limited to forty physicians and the fee will be \$25, registrations to close December 27. Lectures will include:

- Dr Joseph H Chivers How Does the Industrial Medical Department Operate?
- Dr Clarence O Sappington and Mr Frank Peregrine Medicolegal Aspects of Industrial Medical Practice
- Drs Milton H Kronenberg and Adolph Hartung The Pneumonoconioses—The Dusty Trades
- Dr Robert A Kehoe Cincinnati Industrial Toxicology and Poisonings Lead and the Heavy Metals
- Dr James H Sterner, Rochester N.Y. Industrial Toxicology and Poisonings Fumes Gases and Vapors
- Dr Robert W Keeton Medical Problems in Industry
- Dr Louis Schwartz, Bethesda Md. Industrial Dermatoses
- Dr George E Wakerlin Industrial Medical Aspects of Fatigue Noise Humidity Temperature Extremes and Abnormal Pressures
- John J Bloomfield Bethesda Protecting the Place of Employment
- Dr Frederick Slobe Essentials in Emergency Treatment
- Dr Harold A Vonachen Peoria Ill Other Industrial Medical and Surgical Considerations

On Tuesday, March 28, Dr Clarence D Selby, Detroit will address the dinner session on "Responsibility of the Physician in Industrial Practice."

### INDIANA

**Medical Society Gives Award to Radio Station**—The Oberlin Award granted annually by the Lake County Medical Society in recognition of outstanding "uncompensated contributions to the health of the people of Lake County," was received December 9 by radio station WIND of Gary at a dinner meeting held at the Woodmar Country Club in Hammond. A silver plaque was presented to Ralph L Atlass, president of the company which operates the station. Members of its staff were introduced. In his citation accompanying presentation of the plaque, Dr Herbert W Detrick, Hammond, president of the society, declared that for the past five years the station has made its facilities available to the medical

society for the broadcast of information and appeals necessary to the promotion and maintenance of the public health in Lake County communities. The award is the highest recognition the society can confer on an individual or institution, granted only in those years when a truly significant contribution to the public health has been made. The award was established to honor the memory of the late Dr. Thomas W. Oberlin, a charter member of the medical society and a leader in Lake County medical affairs for forty-three years. Dr. and Mrs. Oberlin were killed in an auto accident in 1941.

### MINNESOTA

**Physical Therapy Course Changed**—The twelve month course for physical therapy technicians at the University of Minnesota, Minneapolis, which started its first summer session in June, will be changed so that matriculation will take place the spring quarter on March 27. Registration for the spring quarter will be on March 24-25. The course will continue as a twelve month program.

**Actions of State Medical Board**—On September 15 Judge Oscar R. Knutson of the district court for the fourteenth judicial district issued a bench warrant at Roseau for the arrest of Knute H. Luross, an unlicensed chiropractor, who had been ordered to appear before the court to answer for alleged contempt of court. The defendant has a long record of violating the healing laws of Minnesota, according to the state board of medical examiners. In April 1942, after an investigation by the state board of chiropractic examiners, an order was issued permanently restraining him from practicing healing in the state, including the practice of chiropractic, until he received a certificate of registration in the basic sciences. In August 1943 he was again found to be illegally practicing healing at Roseau. The matter was again investigated by the state board of chiropractic examiners and the defendant was ordered to appear before court on September 15, the contempt charge being based on the alleged violation of the court's injunction in April. Any one having knowledge of the whereabouts of Luross is asked to notify the Minnesota State Board of Medical Examiners.—On November 5 Bernice L. Murdock, proprietress of the Murdock Pharmacy, Minneapolis, paid a fine of \$200 in the district court of Hennepin County, following her plea of guilty to a charge of selling paregoric without a medical prescription. Testimony disclosed that the defendant had made ten sales of paregoric to one person between August 27 and October 20, the sales totaling 52 ounces. There was no prescription authorizing any of the sales.

### NEW JERSEY

**Three Infant Deaths in Diarrhea Epidemic**—Three deaths were reported on December 4 as a result of an epidemic of neonatal diarrhea at the Hackensack Hospital, Hackensack. In a statement to the press Mr. L. Van D. Chandler, health officer of the city, stated that the disease might have some connection with an outbreak of diarrhea in adults which had reached considerable proportions in northern New Jersey.

### NORTH CAROLINA

**Antinose Ordinance**—The Charlotte City Council has adopted a new antinose ordinance, providing a number of new prohibitions with a number of previous regulations to cover noise offenses.

**Public Health Officers**—Dr. Ballard Norwood Jr., Oxford, was chosen president-elect of the North Carolina Public Health Association at its annual meeting in Raleigh October 25 and Dr. William P. Richardson, Chapel Hill, was installed as president. Mary Batchelor, Raleigh, is secretary-treasurer.

**Personal**—Dr. Everett O. Jeffreys, formerly of Philadelphia, has been appointed assistant professor of neurosurgery at the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem.—Dr. Lester A. Crowell Jr., Lincolnton, was elected president of the Board of Medical Examiners of the State of North Carolina at its meeting recently.—Dr. James O. Nolan, Kannapolis, has been appointed a member of the North Carolina State Board of Health, succeeding C. C. Fordham Jr., Ph.D., Greensboro, who is now an officer in the Navy. Other appointments include that of Dr. Hiram L. Large, Rocky Mount.—Dr. Jesse W. Wilcox, Wilmington, has been appointed health officer of Moore County, succeeding Dr. Benjamin M. Drake, Carthage, who resigned to accept a similar position in Alamance County.—Dr. Roy H. McDowell has resigned as clinic supervisor of the Durham Health Department to return to private practice.

### OKLAHOMA

**Personal**—Dr. Mabel M. E. Hart has resigned as director of health for the Tulsa public school system after twelve years' service in the position.—Dr. Victor C. Tisdal has been elected mayor of Elk City. He also served in this capacity in 1939, when he filled an unexpired term.—Dr. Phillip G. Joseph, Oklahoma City, has been named director of the Creek County Health Unit, succeeding Dr. Leland F. Shryock, Oklahoma City.—Dr. William Albert Cook, Tulsa, recently donated his entire personal library to the medical library of the Tulsa County Medical Society.

**Physician Named for Hall of Fame**—Dr. Oscar C. Newman, Shattuck, was inducted into the Hall of Fame at the Oklahoma Historical Society, November 16, and honored during the annual banquet of the Oklahoma Memorial Association. Dr. Newman is a pioneer physician of Oklahoma, first locating in Grand, Day County, in 1900, the same year of his graduation at the University of the South Medical Department, Sewanee, Tenn. In 1907 he moved to Shattuck, where he is still practicing and where he established the Newman Clinic. He has three sons who are physicians associated with him in the clinic. Dr. Newman also graduated at the Medical Department of the University of Cincinnati in 1906.

### PENNSYLVANIA

**Hospital News**—On November 23 ground was broken for an addition to the dispensary building at the George F. Geisinger Memorial Hospital, Danville. The ground floor will house a meeting room with a capacity of 75 to 100 persons. It will be available to any medical, nursing or other hospital group for assembly purposes. The first floor will accommodate an expanded surgical outpatient department, and the second floor will contain a complete suite for the urologic department.

### Philadelphia

**First Center for Study of Physical Medicine**—The first center for the scientific study and development of physical medicine as a branch of medical practice has been established by the National Foundation for Infantile Paralysis in the Graduate School of Medicine of the University of Pennsylvania. The foundation has given a grant of \$150,000 for a five year period from Jan. 1, 1944 to Dec. 31, 1948. According to an announcement, Mr. Basil O'Connor, president of the foundation, stated that this is but the first step in a program which should afford a scientific basis for physical therapy and lead to the establishment of a more desirable teaching program. The Center for Research and Instruction in Physical Medicine will include a center for development of physical medicine as a scientific part of the practice of medicine, a training center for medical leaders and teachers in this branch of medicine and a school for training technical workers under the guidance of such professional and scientific leadership, such a school to be only incidental to and dependent on the first two purposes. The departments of anatomy, physiology, pathology and other basic sciences of the University of Pennsylvania will cooperate in this proposed program. The general direction will be assigned to Dr. Robin C. Buerki, dean of the Graduate School of Medicine. Since it was first organized, the foundation has been continuously concerned with physical medicine in the treatment of infantile paralysis. It has spent during the past six years over \$350,000 to educate and train physical therapy technicians. An additional \$364,000 has been granted to laboratories and universities to study many problems in physiology and medicine having a close connection with the practice of physical therapy, but never before has it been possible to combine in one place both medical research and teaching in this special field.

### TEXAS

**Dr. Sulkin Named Director of New Virus Laboratory**—Simon Edward Sulkin, Ph.D., instructor in bacteriology and immunology, Washington University School of Medicine, St. Louis, has been placed in charge of the virus research laboratory now being organized at the medical school of the Southwestern Medical Foundation, Dallas.

**University News**—Recent additions to the faculty at Baylor University College of Medicine, Houston, include Drs. Charles M. Aves, professor of clinical surgery (honorary), Thomas H. Compere, associate professor of anesthesia, William W. Coulter, associate professor of pathology, and Otis P. Flynt, associate professor of clinical urology, all of Houston.



## WEST VIRGINIA

**Society Opposes Prepaid Medical Plan**—The Cabell County Medical Society, at a special meeting in Huntington December 14, defeated by a margin of but two votes a proposal that the society sponsor a prepaid medical-surgical plan for the county, to be administered by the local hospital service plan association. The vote was taken after the medical service features had been stricken from the proposed contract, which was fashioned after the basic contract approved for use of component societies by a committee composed of members of the fact finding and planning committee of the state medical association. If the objectionable features of the contract can be eliminated, the plan might possibly be resubmitted some time after the first of the year. The county medical society unanimously recommended that a full time county and city health unit be set up in Huntington and that all the health activities of Cabell County be integrated. At the present time a part time unit is functioning in the city.

## GENERAL

**Neuro-Psychiatric Institute Changes Name**—The Neuro-Psychiatric Institute of the Hartford Retreat, Hartford, Conn., announces that it will henceforth be known as the Institute of Living. The institute is located at 200 Retreat Avenue, Hartford 2, with offices at 459 Marlborough Street, Boston 15, and 610 Park Avenue, New York 21.

**Board of Ophthalmology Moves Executive Office**—Effective January 1 the executive office of the American Board of Ophthalmology will move to P O Box 1940, Portland 2 Maine. Officers for 1944 are Dr John Green, St Louis, chairman, Dr Frederick C Cordes, San Francisco, vice chairman, Dr S Judd Beach, Portland, secretary treasurer, and Dr Theodore L Terry, Boston, assistant secretary. The 1944 examinations will be held in New York June 3-4 and Chicago October 5-7.

**Labor Unions Urge Cooperation with Health Departments**—A resolution was adopted by the American Federation of Labor at its meeting in Boston recently calling to the attention of affiliated unions the fact that local public health departments are prepared to give blood and other tests without charge to the individual and that members of organized labor are encouraged to make proper use of these health protection and promoting facilities. In California a resolution was passed requiring blood tests as a requisite for becoming a member of the American Federation of Labor.

**Executive Director Named for Cancer Society**—J Louis Neff, East Williston, Long Island, N Y, has been appointed executive director of the American Society for the Control of Cancer. The position is a newly created one and will function independently from that held by Clarence C Little, Sc.D, managing director. The new appointment will be effective January 1. Mr Neff has been executive secretary of the Nassau County Medical Society since 1923. He has also been secretary of the Nassau County Cancer Committee which he helped organize, since 1928. He is a fellow of the American Public Health Association.

**Southern Chapter of Chest Physicians Organized**—The Southern Chapter of the American College of Chest Physicians was organized at the Hotel Gibson, Cincinnati, November 18 with Dr Paul H Ringer Asheville N C as president. Other officers in the group include Drs Alvis E Greer, Houston, Texas, and Carl C Aven Atlanta Ga vice presidents and Dr Benjamin L Brock, Waverly Hills, Ky, secretary-treasurer. Speakers at the organization meeting included Drs J Winthrop Peabody, Washington, D C president of the college, and Dr Everts A Graham, St Louis.

**Shipments of Penicillin**—A bulletin from the Air Cargo Department of United Air Lines calls attention to the extreme advisability of having penicillin shipments sent via air express, with priority, in order to insure the fastest possible delivery. C P Graddick, director of United's Air Cargo Department, reports that certain critically needed penicillin shipments have, in the past, been delayed through an apparent lack of understanding on the part of physicians and shippers alike regarding the necessity of establishing priorities for such shipments. He is urging all shippers of the drug to obtain such priorities by calling the nearest regional priorities office of the Army Air Transport Command and stating the urgency of the case. In cases in which penicillin (or any other medicinal product) may mean the difference between life and death such priorities will be granted. Mr Graddick has been advised.

**Allergy Groups Merge**—The Society for the Study of Asthma and Allied Conditions and the American Association for the Study of Allergy were merged on December 4 to form the American Academy of Allergy. Members in the two parent organizations will become members of the academy. Officers are Drs Robert Chobot, New York, president, Oscar Swineford Jr, Charlottesville, Va, vice president, Karl D Figley, Toledo, Ohio treasurer, and William C Spain, New York, secretary. Members of the executive committee are Drs Harry L Alexander, St Louis, Matthew Walzer, Brooklyn, N Y, Milton B Cohen, Cleveland, Robert A Cooke, New York, and Samuel M Feinberg, Chicago. According to Dr Spain, such a merger has been planned for a number of years and was made possible since the two parent organizations were possessed of identical aims and ideals and the membership of the two societies was largely interlocking.

**The Academy of Orthopedics**—The twelfth annual meeting of the American Academy of Orthopaedic Surgeons will be held at the Palmer House Chicago, January 22-26, under the presidency of Dr Marius N Smith-Petersen, Boston. The following program has been announced:

Dr Lenox D Baker Durham, N C Acute Osteomyelitis with Staphylococci Septicemia  
Major Champ Lyons M C A U S Penicillin in the Treatment of Septic Gunshot Wounds  
Dr Arthur G Davis Erie Pa, Nonunions of the Tibia  
Dr Carroll Glenn Barber Cleveland Amputation of the Leg with Induced Synostosis of the Distal Ends of Tibia and Fibula  
Dr John Albert Key St Louis, Amputation for Chronic Osteomyelitis  
Major Hugh M B A Smith Jr and Capt Seymour Scholtz M C A U S Intravenous Morphine  
Col Walter Bauer M C, A U S The Diagnostic Value of Synovial Fluid Examinations  
Dr Clay Ray Murray, New York The Detailed Operative Technique for Open Reduction and Internal Fixation of Long Bone Fractures  
Capt Camille M Shaar (MC) U S Navy The Use of the Stader Apparatus in Fresh Fractures  
Dr Robert W Johnson Jr, Baltimore The Application of Haynes's Skeletal Fracture Apparatus to Special Orthopedic Problems  
Comdr Robert Maxet Jr (MC) U S Naval Reserve Half Pin Fixation of Fresh and Old Fractures  
Dr Gerald G Gill Oakland Calif The Cause of Severe Shortening of the Leg Following Tuberculosis of the Hip in Children Arrest of Growth from Premature Central Closure of the Epiphyseal Cartilages About the Knee  
Comdr Joseph S Barr (MC), U S Naval Reserve Medical Audio-visual Education in the Navy  
Drs LeRoy C Abbott Frederic C Bost Carl E Anderson and John B Saunders San Francisco Injuries to the Ligaments of the Knee Joint  
Dr Allen F Voshell Baltimore Subtalar Collateral Ligament Bursitis Report of Cases  
Lieut Col Theodore Campbell Thompson M C A U S Quadricepsplasty to Improve Knee Function  
Dr Ralph K Ghormley Rochester Minn Pedicle Grafts to Deep Skin Defects of the Foot and Ankle  
Dr Henry Rilton McCarroll St Louis Immediate Application of Free Full Thickness Graft for Traumatic Amputation of the Finger  
Dr Oscar L Miller Charlotte N C, Orthopedic Surgery in South America  
Dr Elen J Carey Milwaukee The Effect of Poliomyelitis on the Nerve Endings in Skeletal Muscle  
Dr Marion Beckett Howarth New York Calcification of Supraspinatus Tendon  
Dr Julius S Neviasser Washington D C A Study of the Pathological Findings in Periarthritis of the Shoulder  
Lieut Comdr Merrill C Mensor and Lieut Frank H Smith (MC) U S Naval Reserve Fractures of the Pacific Combat Area  
Dr Robert V Funsten Charlottesville Va Analysis of Healing and Healing Time in 250 Cases of Fractures in the Shafts of the Tibia and Femur

## Government Services

## Urge New Agency on Child Welfare

The establishment of a small federal agency to serve as a clearing house on the subject of juvenile delinquency was suggested at the Senate subcommittee on wartime health education December 1, by Richard A Chappell, chief of probation of the Administrative Office of the United States Courts. Mr Chappell recommended that the unit should be made up of representatives of several federal departments now concerned with child welfare, such as the Children's Bureau, Public Health Service, Bureau of Prisons, Federal Bureau of Investigation and Federal Probation Service. Michael J Scott, St Louis, secretary of the Juvenile Court Judges of America, said that in St Louis 90 per cent of delinquency arose from "some broken home condition." Dr Arnold L Gesell, director of the clinic of child development, Yale University, New Haven Conn., stated that in the recent six months Connecticut had had a 30 per cent overall increase in juvenile delinquency over the same period last year and advocated inducing those boys and girls into civic service on a basis of long range planning with federal affirmation not with federal funds.

## Deaths

**John Harvey Kellogg** ♂ Battle Creek, Mich., widely known as a health evangelist and director of the Battle Creek Sanitarium, died of pneumonia at his home on December 14, aged 91. Following his graduation from Bellevue Hospital Medical College, New York, in 1875, Dr. Kellogg took up the practice of medicine in Battle Creek. In 1876 he became superintendent and surgeon of the sanitarium then known as the Health Reform Institute. In that position he devoted much of his time to research. He is credited with the invention of much improved apparatus and of instruments for medical and surgical purposes, and also with modifications of many commonly used cereals. Thus it is usually believed that the early cereal products of the General Foods Corporation, developed by Mr. Post, and of the W. K. Kellogg Company resulted directly from the experiments in this direction of Dr. John Harvey Kellogg. In connection with his conduct of the sanitarium, he devoted much attention to the use of physical therapy; he made many interesting innovations in the devices used for this purpose, including particularly the so-called electric light bath and the sinusoidal current.

His numerous writings and lectures on health and hygiene attracted wide attention. He was a member of the Michigan State Board of Health from 1878 to 1890 and from 1912 to 1916. He was a fellow of the American Association for the Advancement of Science, American College of Surgeons, Royal Society of Medicine, England, and the National Geographic Society. He was a member of the American Public Health Association and a corresponding member of the Société d'hygiène de France. As an adjunct to the Battle Creek Sanitarium, he founded and became president emeritus of the Battle Creek College, also founder and president of the Race Betterment Foundation and founder and medical director of the Miami-Battle Creek Sanitarium, Miami Springs, Fla.

Following his marriage, he and his wife provided funds for the education of many boys and girls, rearing over forty children and legally adopting several of them.

He was awarded the honorary LL.D. by Olivet (Mich.) College and by the Lincoln Memorial University.

In the course of his career, Dr. Kellogg held rigidly to a number of concepts, some of which did not meet with general medical approval. These include, among others, vegetarianism, extensive use of grains, fruits and vegetables in the diet, and opposition to tobacco and alcohol, outdoor sleeping, drinking of acidophilus milk and yogurt, specialized types of seating devices and systems of exercise. He placed special stress on multiple daily actions of the bowel. Notwithstanding, in the conduct of the sanitarium he utilized the advances of modern medical science and emphasized the importance of continuous progress. He was widely known to many men of eminence as a health evangelist capable of inspiring good health habits conducive to longevity.

**Serge Androp**, Talmage, Calif., Bennett Medical College, Chicago, 1913, Medical Field Service School, Carlisle, Pa., in 1923 and the School of Aviation Medicine, Mitchell Field, Long Island, 1925, member of the Medical and Surgical Faculty of Maryland, American Psychiatric Association, Military Order of the World War and the Reserve Officers Association of the United States, specialist certified by the American Board of Psychiatry and Neurology, Inc., received the Victory Medal and two bronze stars for heroism during World War I, colonel in the medical reserve corps of the U. S. Army not on active duty, formerly assistant in neuropathology at the Johns Hopkins University School of Medicine, Baltimore, and assistant clinical professor of psychiatry at the Marquette University School of Medicine, Milwaukee, served on the staffs of the Johns Hopkins Hospital, Baltimore, Spring Grove Hospital, Catonsville, Md., Ohio Hospital for Epileptics, Gallipolis, Milwaukee County Hospital for Mental Diseases, Wauwatosa, and the Mendocino State Hospital, in 1935 awarded first prize by the Eugenics Research Association for original research on the "probability of commitment for a mental disorder of any kind, based on the individual's family history", died suddenly, November 8, aged 54, of heart disease following pneumonia.

**Verne Carlton Hunt** ♂ Los Angeles, Rush Medical College, Chicago, 1913, clinical professor of surgery at the University of Southern California School of Medicine, at one time assistant professor of surgery, University of Minnesota Graduate School, Minneapolis-Rochester, fellow in surgery at the Mayo Foundation and head of a section in the division of surgery at the Mayo Clinic, member of the founders group of

the American Board of Surgery, member of the American Surgical Association, Pacific Coast Surgical Association and the American Urological Association, served as vice president and treasurer of the Western Surgical Association, fellow of the American College of Surgeons, member of the executive committee and surgical staff, St. Vincent's Hospital, shot December 13, aged 55.

**Oliver Deveta Hamlin** ♂ Oakland, Calif., Cooper Medical College, San Francisco, 1894, member of the House of Delegates of the American Medical Association in 1905, 1909, 1911, 1912, 1916 and 1926, past president of the California Medical Association and the Alameda County Medical Association, a founder, formerly a member of the board of governors and life member of the American College of Surgeons, formerly professor of clinical surgery at the Oakland College of Medicine and Surgery, past president of the board of health of Oakland, for many years chief surgeon of the emergency service of the Alameda County Hospitals, served on the staffs of the Providence and Samuel Merritt hospitals, division surgeon for the Southern Pacific Company, died October 11, aged 73.

**Edward Sewall Abbott**, Bridgton, Maine, the Hahnemann Medical College and Hospital, Chicago, 1885, member of the Maine Medical Association and the New England Obstetrical and Gynecological Society, past president of the Cumberland County Medical Association and the Oxford County Medical Society, served as health officer of the town, formerly president of the Bridgton National Bank and director of the Bridgton Savings Bank, for many years president of the Bridgton Library Association, in 1935 was presented with the fifty year service medal by the Maine Medical Association, president of the Northern Cumberland Memorial Hospital, died October 12, aged 80.

**Walter Scott Stewart** ♂ Wilkes-Barre, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1883, member of the House of Delegates of the American Medical Association in 1922, fellow of the American College of Surgeons, veteran of the Spanish-American War, president of the local board of health, chairman of the board of directors of the Kirby Memorial Health Center, member of the board of directors of the Wilkes-Barre General Hospital and on the medical and surgical staff, surgeon for the Lehigh Valley Railroad, Pennsylvania Railroad and the Kingston Coal Company, died October 23, aged 86, of lobar pneumonia.

**Walter Franklin Harriman** ♂ Sioux City, Iowa, University of Pennsylvania School of Medicine, Philadelphia, 1924, diplomate of the National Board of Medical Examiners, fellow of the American College of Surgeons, formerly clinical assistant in surgery at the Temple University School of Medicine, Philadelphia, served during World War I, first lieutenant, medical reserve corps, U. S. Army, not on active duty on the staffs of the Methodist Hospital, Lutheran Hospital, St. Vincent's Hospital and St. Joseph Mercy Hospital, where he died October 11, aged 45, of coronary thrombosis.

**Sidney J. Anderson**, Midway, Ky., University of Louisville Medical Department, 1891, member of the Kentucky State Medical Association, served during World War I, died in the Veterans Administration Facility, Lexington, October 21, aged 75, of cerebral hemorrhage.

**Varney Andrews**, Floydada, Texas, College of Physicians and Surgeons, Baltimore, 1889, for many years health officer of Floyd County, member of the school board for fourteen years, examining physician and a member of the draft board during World War I, died in a Plainview hospital September 6, aged 79.

**R. M. Bachtel**, Ravenswood, W. Va., Starling Medical College, Columbus, 1895, died in Spencer October 22, aged 74, of cardiovascular hypertension.

**John William Barr** ♂ Homestead, Pa., Medical Department of the Western University of Pennsylvania, Pittsburgh, 1895, on the staff of the Homestead Hospital, died in the Mercy Hospital, Pittsburgh, October 21, aged 74, of uremia.

**Max Bakst** ♂ Brooklyn, Long Island College Hospital, Brooklyn, 1911, member of the American Academy of Ophthalmology and Otolaryngology, specialist certified by the American Board of Otolaryngology, associate otolaryngologist at the Beth Moses Hospital, died November 10, aged 57.

**Robert Samuel Barr**, South Miami, Fla., Detroit Homeopathic College, 1911, died in the James M. Jackson Memorial Hospital, Miami, October 21, aged 69, of coronary thrombosis.

**Frank Jefferson Blodgett**, New York, University of Vermont College of Medicine, Burlington, 1881, member of the Medical Society of the State of New York, at one time

clinical assistant in the aural department, Columbia University College of Physicians and Surgeons, served on the staffs of the Manhattan Eye, Ear and Throat Hospital, the New York Eye and Ear Infirmary and the New York Polyclinic Medical School and Hospital, died October 30, aged 86, of cerebral hemorrhage.

Jacob Harry Boss, Tulsa, Okla., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901, veteran of the Spanish-American War, formerly coroner of Cherokee County, Kan., died in the Veterans Administration Facility, Muskogee, October 11, aged 72, of coronary arteriosclerotic heart disease.

Daniel Webster Boyd, Tylertown, Miss. (licensed in Mississippi, year unknown), died October 12, aged 80, of chronic myocarditis and bronchopneumonia.

John Herriott Boyd ♂ Beavertown, Pa., University of Pittsburgh School of Medicine, 1931, died October 28, aged 40, of an overdose of chloroform, self administered.

John Colville Bradner ♂ Middletown, N. Y., New York Homeopathic Medical College and Hospital, New York, 1907, served as a captain in the 369th Infantry, 93d Division, American Expeditionary Forces and was awarded the Croix de Guerre, consultant on the staff of the Horton Hospital, where he died October 13, aged 61.

Charles Nelson Branin ♂ Hagerstown, Md., Baltimore Medical College, 1897, for many years medical examiner for the Western Maryland Railway Company, served during World War I, died October 29, aged 67, of acute pulmonary edema.

Samuel Brister, Philadelphia, Baltimore University School of Medicine, 1899, served in France while in the medical corps of the U. S. Army during World War I, died October 15, aged 71.

George M. Bristow, Princeton, Mo., College of Physicians and Surgeons, Keokuk, Iowa, 1877, Louisville (Ky.) Medical College, 1881, member of the Missouri State Medical Association, organizer and first president of the Mercer County Medical Society, a position he held for many years, member of the state legislature from 1920 to 1924, died October 30, aged 88, of pneumonia.

F. Marion Brock, Roopville, Ga., University of Georgia Medical Department, Augusta, 1889, died November 1, aged 79.

Archie Ackers Brown, Carroll, Ohio, Starling-Ohio Medical College, Columbus, 1909, member of the Ohio State Medical Association, died in the Grant Hospital, Columbus, October 28, aged 55.

Walter Thomas Brown ♂ Wallis, Texas, Louisville (Ky.) Medical College, 1889, died in the Hermann Hospital, Houston, October 18, aged 76.

Albert Frank Burgis, New Orleans, Tulane University of Louisiana School of Medicine, New Orleans, 1918, served during World War I, died October 22, aged 47, of cerebral hemorrhage.

Theodore Burr, Jamaica, N. Y., University of the City of New York Medical Department, New York, 1895, died November 2, aged 81, of cerebral thrombosis and arteriosclerotic heart disease.

Edward James Callahan, Schuylerville, N. Y., Albany Medical College, 1914, member of the Medical Society of the State of New York, past president of the Saratoga County Medical Society, health officer and member of the board of education of Schuylerville, served overseas during World War I, died in the Albany Hospital November 8, aged 51, of congestive heart disease.

James Watkins Calloway, Montgomery, Ala., Vanderbilt University School of Medicine, Nashville, Tenn., 1882, University of Nashville Medical Department, 1883, died in a local hospital October 29, aged 85.

Daniel Alton Campbell, Boonville, Ind., Kentucky University Medical Department, Louisville, 1904, member of the Selective Service Board of Warrick County, major, medical reserve corps U. S. Army, not on active duty, served during World War I, formerly a member of the county welfare board and trustee of Boon Township, died October 2, aged 72, of coronary occlusion.

Henry W. Case, Chicago, the Hahnemann Medical College and Hospital, Chicago, 1891, died November 5, aged 77, of angina pectoris.

Eugene S. Clark, Bellingham, Wash., Minnesota Hospital College, Minneapolis, 1887, formerly associated with the U. S.

Public Health Service, died October 22, aged 85, of cerebral hemorrhage.

John Wesley Conrad, Port Carbon, Pa., Medico-Chirurgical College of Philadelphia, 1916, member of the Medical Society of the State of Pennsylvania, medical examiner for local draft board number 6, served in France during World War I, for many years on the staff of the Good Samaritan Hospital, Pottsville, died November 3, aged 52, of angina pectoris.

Morgan Joseph Cramer, Long Island City, N. Y., Medical Department of the Western University of Pennsylvania, Pittsburgh, 1896, served on the staffs of the New York City Hospital, Welfare Island, and the New York Polyclinic Medical School and Hospital, died November 4, aged 71, of pulmonary edema.

Edgar F. Crowther, Yazoo City, Miss., Louisville (Ky.) Medical College, 1882, died October 20, aged 85.

Thomas Nelson Davey ♂ Bayonne, N. J., Trinity Medical College, Toronto, Ont., Canada, 1900, died in the Bayonne Hospital November 7, aged 76, of coronary thrombosis.

James A. De Moss, Thayer, Kan., St. Louis College of Physicians and Surgeons, 1882, also a minister, died in Chanute October 12, aged 84.

Leonard Albert Dessar, New York, Medical College of Indiana, Indianapolis, 1884, died October 4, aged 79.

Robert H. Dunnington, Daytona Beach, Fla., Eclectic Medical Institute, Cincinnati, 1874, American Medical College, St. Louis, 1877, died September 14, aged 83.

Carrie Hitchcock Edwards, San Diego, Calif., Michigan College of Medicine and Surgery, Detroit, 1898, died October 17, aged 73, of left ventricular failure, coronary thrombosis and arteriosclerosis.

Adolph G. Enderle, St. Louis, Missouri Medical College, St. Louis, 1891, died October 20, aged 79.

Walter Eugene Estabrook, Somerville, Tenn., University of Tennessee College of Medicine, Memphis, 1914, served during World War I, died October 13, aged 55.

George Foster Fiske ♂ Chicago, Yale College Medical Department, New Haven, Conn., 1883, member of the American Academy of Ophthalmology and Otolaryngology and the American Otological Society, Inc., fellow of the American College of Surgeons, specialist certified by the American Board of Otolaryngology, on the staff of the Henrotin Hospital, where he died October 18, aged 83, of heart disease.

Reuben Fred Frost, Huntington, Ind., College of Physicians and Surgeons, Baltimore, 1882, member of the Indiana State Medical Association, for many years secretary of the city board of health, on the staff of the Huntington County Hospital, died November 2, aged 87, of senility.

Charles Robertson Gannaway, Kings Park, N. Y., Northwestern University Medical School, Chicago, 1904, at one time engaged in Near East Relief work, senior assistant physician at the Kings Park State Hospital, where he died November 5, aged 69, of coronary thrombosis.

Andrew J. Goodwin ♂ Bradley, Ill., Illinois Medical College, Chicago, 1907, village health officer, president of the Bradley State and Savings Bank, local physician for the Illinois Central Railroad, on the staff of St. Mary's Hospital, Kankakee, where he died October 11, aged 64, of cerebral hemorrhage.

Harold Woodworth Graber, Chicago, Northwestern University Medical School, Chicago, 1926, served during World War I, assistant chief surgeon, Rock Island Railroad, died in the Veterans Administration Facility, Hines, October 17, aged 51, of heart disease and cerebral hemorrhage.

Amos Graves Sr., San Antonio, Texas, University of Pennsylvania Department of Medicine, Philadelphia, 1892, on the staffs of the Medical Arts Hospital and the Santa Rosa Hospital, where he died October 12, aged 73, of carcinoma of the tongue.

H. P. Guthrie, Springfield, Mo., Barnes Medical College, St. Louis, 1898, died October 11, aged 75.

George Edward Hamilton, Orrick, Mo., Northwestern Medical College, St. Joseph, 1887, also a druggist, died in the Excelsior Springs Sanitarium and Hospital, Excelsior Springs, November 10, aged 83, of heart disease.

Lorne Edward Hastings ♂ Philadelphia, Jefferson Medical College of Philadelphia, 1911, also a pharmacist, formerly acting professor of materia medica and pharmacology at the Emory University School of Medicine, Atlanta, and professor

of physiology and pharmacology at the Southern Methodist University Medical Department, Dallas, Texas, served during World War I, died November 6, aged 61

James Edward Heap, St Marys, Ohio, Medical College of Ohio, Cincinnati, 1905, member of the Ohio State Medical Association, for many years health officer, served on the staff of the Lima Memorial Hospital, Lima, died October 8, aged 62 of heart disease

Stephen A Hemmi, Chicago, Bennett College of Eclectic Medicine and Surgery, Chicago, 1884, Rush Medical College, Chicago, 1894, member of the Illinois State Medical Society, formerly on the staff of the Evangelical Deaconess Hospital, died October 27, aged 85, of arteriosclerosis

Norris Rathbun Higgins, Orange, N J, Yale University School of Medicine, New Haven, Conn, 1941, diplomate of the National Board of Medical Examiners, on the courtesy staff of the Orange Memorial Hospital, where he died October 20, aged 28, of pneumonia

Columbus C Hill, Galesburg, Ill, Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1901, died in St Mary's Hospital October 18, aged 71, of myocarditis

Allen G Thurman Hipps, Asheville, N C, Jefferson Medical College of Philadelphia, 1916, served during World War I, a member of the draft board of appeals of Western North Carolina, a physician for the State Highway commission, died in a local hospital October 31, aged 52

Ralph Hogshead, Mammoth, W Va., Loyola University School of Medicine, Chicago, 1918, at one time secretary of the Fayette County Medical Society, formerly councilor of the Sixth District Medical Society, served during World War I, examining physician for local draft board number 3, Montgomery, physician for the Kanawha and Hocking Coal and Coke Company, died in the Charleston General Hospital, Charleston, October 9, aged 54, of acute dilatation of the heart with pulmonary edema



LIEUT CLAUDE R HUFFMAN  
(MC), U S N R, 1911-1943

Walter Robert Holladay, Meridian, Miss, Tulane University of Louisiana School of Medicine, New Orleans, 1919, member of the Mississippi State Medical Association, served during World War I, on the staff of Riley's Hospital, where he died October 20, aged 48, of tuberculosis

Griffin W Holland, Eastville, Va, University of Virginia Department of Medicine, Charlottesville, 1896, member of the Medical Society of Virginia, formerly associated with the U S Public Health Service in Memphis, Tenn, chairman of the board of health, councilor of the First District Medical Society, director of the Eastville Bank, died October 23, aged 69, of cerebral hemorrhage, arteriosclerosis and hypertension

William Harold Holland, Lakewood, Ohio, University of Texas School of Medicine, Galveston, 1912, accidentally shot by a hunter while hunting deer in Beauchene, Que, Canada, October 21, aged 60

Oliver Hopkinson, Merion Station, Pa, University of Pennsylvania Department of Medicine, Philadelphia, 1883, for many years on the staff of the Lying-In Hospital, Philadelphia, died October 9, aged 85, of coronary thrombosis

Felix A Hughes, Okolona, Ark., University of Arkansas School of Medicine, Little Rock, 1905, died October 8, aged 68

Henry Eugene Irish, Chicago, University of Illinois College of Medicine, Chicago, 1901, professor of pediatrics emeritus at his alma mater, specialist certified by the American Board of Pediatrics, Inc, member of the American Acad-

emy of Pediatrics, served as attending pediatrician at the University and Cook County hospitals, died December 9, aged 66, of coronary thrombosis

Charles F Isaacs, Chicago, Northwestern University Medical School, Chicago, 1904, died October 27, aged 66, of coronary thrombosis

Thourston George Jorgenson, Chicago, Chicago Medical School, 1922, died November 6, aged 53, of chronic myocarditis, arteriosclerosis and acute nephritis

James Oscar Latta, Clay Center, Neb, Lincoln Medical College of Cotner University, 1902, member of the Nebraska State Medical Association, past secretary of the Clay County Medical Society, served as mayor and member of the city council, at one time a member of the state commission for the insane, president of the chamber of commerce, died October 6, aged 66

Fairfield Mortimore, New York, Eclectic Medical College of the City of New York, 1878, died in St. Luke's Hospital September 30, aged 90, of heart disease.

Clinton Francis Rife, Naperville, Ill, Rush Medical College, Chicago, 1894, formerly a medical missionary, died November 22, aged 76

George Francis Scheib, Champaign, Ill, College of Physicians and Surgeons of Chicago School of Medicine of the

University of Illinois, 1899, member of the Illinois State Medical Society, for many years physician for the Chicago, Milwaukee and St. Paul Railroad, died in the Mercy Hospital, Urbana, November 2, aged 76

Thomas James Sheehy, Tomah, Wis, Bennett Medical College, Chicago, 1912, member of the State Medical Society of Wisconsin, past president of the Wisconsin State Board of Medical Examiners, served during World War I, member of the board of education, died in the Columbia Hospital, Milwaukee, October 13, aged 55, of acute myocarditis and coronary occlusion



LIEUT KURT B KLEE  
M R C, U S Army, 1913-1943

Warren Finley West, Waxahachie, Texas, Jefferson Medical College of Philadelphia, 1886, member of the State Medical Association of Texas and the Texas Public Health Association, served as health officer of Ellis County for twenty-eight years, died in a Dallas hospital September 28, aged 86, of myocardial failure

### KILLED IN ACTION

Claude Raymond Huffman, Knoxville, Tenn, University of Tennessee College of Medicine, Memphis, 1936, member of the Tennessee State Medical Association, lieutenant, medical corps, U S Naval Reserve, commissioned a lieutenant (jg), U S Naval Reserve, on June 14, 1941, died in the south Pacific combat area, October 5, aged 32, of shrapnel wounds of the chest and a gunshot wound

Kurt Benjamin Klee, Indianapolis, Indiana University School of Medicine, Indianapolis, 1940, commissioned a first lieutenant in the medical reserve corps, U S Army, on Sept 19, 1941, began extended active duty on April 10, 1942 and assigned to the Aviation Cadet Board in Boston, served with the paratrooper division, decorated posthumously with the medal of the Purple Heart, killed in action in the North African area July 10, aged 30

## Correspondence

### "HOME MADE" PENICILLIN

To the Editor—Since July 1941 the Northern Regional Research Laboratory, which is one of four regional research laboratories operated by the Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration U S Department of Agriculture, has been extensively engaged in research on the production of penicillin. This work has been broad in scope, including the isolation of many new penicillin producing organisms, spore selection to secure higher producing strains, improvement of the culture mediums and isolation and purification of the penicillin itself.

During recent weeks a number of scientific articles and press releases have appeared indicating that the production of penicillin preparations suitable for external use is a comparatively simple matter that can be undertaken in laboratories possessing only limited facilities, or even in the kitchen. The work thus reported, in some cases, may constitute noteworthy contributions to the field of penicillin therapy, and it is not our wish to minimize in any way the possible importance of these investigations. We do, however, feel that the time has come when a word of caution should be given. Statements to the effect that *Penicillium notatum* is the green or blue-green mold found on bread, cheese or other foods are quite misleading if, in fact, not actually dangerous. This species does often occur on these products but so does a great variety of other blue-green molds. In the genus *Penicillium* there are literally scores of blue-green species which can be distinguished from *Penicillium notatum* and its allies only by painstaking laboratory cultivation and microscopic examination. This fact is illustrated by our work of recent months. We have made a concentrated effort to isolate as many strains as possible of *Penicillium notatum*, *Penicillium chrysogenum* and other closely related species and have examined hundreds of samples of molded foods, fruits, soils and other possible sources of material. We consider it a conservative estimate that not one out of fifty of the blue-green molds encountered belonged to the *Penicillium notatum* group. Not more than one out of one hundred represented the species *Penicillium notatum* itself, and only a limited number of these produced appreciable yields of penicillin.

The metabolic products of only a few of the other blue green species of molds have been adequately studied, and it is entirely possible that among them exist some species or strains that are capable of producing, in considerable quantity, substances as toxic to animals as to certain pathogens which infect them. A number of blue green molds, such as *Penicillium citrinum*, *Penicillium spinulosum*, *Penicillium puberulum*, *Penicillium aurantio virens*, *Aspergillus clavatus*, *Aspergillus fumigatus* and *Gliocladium fimbriatum*, are already known to produce bactericidal substances, some of which are quite toxic when injected into laboratory animals. One therefore should be extremely careful in the selection and maintenance of cultures for use in the production of penicillin.

Contamination of *Penicillium notatum* cultures with other blue green species or with pathogenic organisms is also a matter of serious concern. This is emphasized by the fact that in certain recent cases experienced workers have started with a good penicillin producing culture and subsequently found this to have become contaminated or even replaced by an entirely

different species or strain. In the hands of inexperienced workers, or in laboratories with inadequate facilities, this possibility is multiplied manyfold. If a contaminating organism should produce some material toxic to man, the dangers involved might be very considerable. In the present state of our knowledge of the metabolic products of the blue-green *Penicillia* and *Aspergilli* as a whole, the indiscriminate selection of newly isolated cultures for penicillin production should not even be considered until their correct identity is established.

Owing to the pressure of other work, the staff of this laboratory is not in a position to check the correctness of all cultures which may be used in this type of experimentation. We have, however, deposited with the American Type Culture Collection, 3900 Reservoir Road, Washington, D C, cultures of the two strains of *Penicillium notatum* which are being used almost universally in industry for the production of penicillin, and these are available on request for a nominal charge.

Another possibility which must be considered when using these crude forms of penicillin is that the patient may conceivably become sensitized to mold protein, which is inevitably present in such preparations. The danger of this would be particularly great when these protein containing solutions are applied to an extensive burned area. Commercial preparations of penicillin are protein free and have been thoroughly tested for bactericidal activity, pyrogens, toxicity and sterility.

In summary, we feel that there is inherent danger in the proposed practice of using "home made" penicillin, for the reasons outlined.

KENNETH B RAPER, PH D

ROBERT D COGHILL, PH D

Peoria, Ill

Senior Microbiologist and Chief, respectively, Fermentation Division, Northern Regional Research Laboratory

### ESSENTIAL HYPERTENSION

To the Editor—The editorial comment on the etiology of hypertension (THE JOURNAL, November 20, p 772) discusses—and, because of its important etiologic and therapeutic implications, perhaps too briefly—a study which proposes to demonstrate that essential hypertension is of vasomotor origin. The authors (Gregory, Raymond, Lindley, E. L, and Levine, *Harry Texas Rep Biol & Med* 1 167 [No 2] 1943) seem to base their study on the following considerations:

1 Essential hypertension is the result of arteriolar vasoconstriction.

2 This vasoconstriction is either humoral or neurogenic in origin.

3 Spinal anesthesia decreases blood pressure greatly in hypertensive subjects, in normal subjects "there was a slight fall in the blood pressure of several patients during spinal anesthesia."

"However, 'the blood pressures in the group with normal pressures remained essentially the same during the period of spinal anesthesia'" (p 180).

4 It is concluded that the hypotensive effect of spinal anesthesia is due to release of the abnormal arteriolar vasoconstriction.

5 Since the hypotension develops rapidly after induction of the anesthesia it is also concluded that the release of vasoconstriction is not due to interference with a humoral renal pressor system and that the demonstration has been made that the vasoconstriction is neurogenic.



The first two propositions are matters of general agreement. The third we can accept only with reservation. The hypertensive's arterial pressure has a good deal farther to fall than has that of the normotensive. But, comparing the hypotensive effect of high spinal anesthesia (tenthi dorsal) in normal subjects and in our hypertensives (as shown in the table) we observe that proportionately to the control level of arterial pressure the hypotensive effects in the two groups are very similar. The distinction between the effect of anesthesia in normotensive and in hypertensive subjects is therefore qualitative only. It is not, as the authors seem to imply, a distinction of kind.

With this in mind, one proceeds to proposition 4 with greater reservation. The complex circulatory effects of spinal anesthesia in normotensive and hypertensive subjects have recently been reviewed by Page (*Anesth & Analg* 22 196 [July-Aug] 1943) and need not detain us here. In one study (Smith,

*Effect of Spinal Anesthesia on Renal Function of Normal Persons and of Patients with Two Types of Arterial Hypertension*

	Mean Arterial Pressure per Cent of Change	HD/FMD, per Cent of Change	Afferent Renal Resistance, per Cent of Change	Efferent Renal Resistance, per Cent of Change	Total Renal Resistance, per Cent of Change
Normal subjects Smith et al (Lampport)					
Mean	-17		-70	-0.2	-32
"Neurogenic" patients (7)					
Mean	-24	+18	-57	-25	-48
Essential hypertensives (4)					
Mean	-1	-5	+6	-4	+3

Summary of observations on the etiologic distinction of types of arterial hypertension in man by spinal anesthesia. The observations noted as "normal subjects" are obtained from Lampport's (*J Clin Investigation* 20 53 [Sept] 1941) recalculation of data obtained by Smith, Roventine, Goldring, Chasis and Ranges (*Ibid* 18:319 [May] 1939). The numerals in the first column indicate the number of patients in each group. The functional distinction in arteriolar response to spinal anesthesia is shown by the mean differences in each of observations made during the first twenty-five minutes of anesthesia from control levels.

H W, Roventine, E A, Goldring, William, Chasis, Herbert, and Ranges, H A, *J Clin Investigation* 18 319 [May] 1939) cogent evidence is presented for the view that such vasodilatation as may develop is largely postarteriolar (capillaries, venules, veins) and not arteriolar. Indeed, such evidence as Gregory, Lindley and Levine present on this point, namely the depression of urea clearance (p 184) during anesthesia in hypertensives and the rise of blood pressure during vomiting, suggests that some mechanism other than arteriolar vasodilatation must account for the hypotension. The persistent pressor effect of epinephrine which they observed during the hypotension is hardly evidence of the "functional integrity of the peripheral vasoconstrictor apparatus" (p 195), for it seems likely that the pressor effects of this drug are, in this circumstance, the result of its cardiac and venopressor activities and that its net arteriolar effect is in fact dilator (Smith and others).

One cannot therefore accept the proposition that a decrease of arterial pressure in hypertensives subjected to spinal anesthesia is the result of arteriolar vasodilatation. And, in view of this, the rate of fall and rise of pressure in such subjects is not germane to the discussion.

Arterial pressure is at best a secondary and, as we have seen, sometimes nonrevealing expression of arteriolar constriction. But study of the arterioles themselves would seem more likely to provide information on the origin of hypertension. Fortunately, methods are available by which arteriolar reactions of the renal vascular bed, carrying as it does about one fourth of the cardiac output, can be studied. Thus, it has been shown that the activity of the renal vasopressor system (renin, renin substrate, angiotonin) is associated with renal vasoconstriction which develops in both the afferent and the efferent glomerular arterioles. A similar renal vascular status in most patients suffering from arterial hypertension leads naturally to the view that the renal pressor system operates in this disease. Many other evidences supplement this view (Page, I H *Bull New York Acad Med* 19 461 [July] 1943). The absence of such vasoconstriction in many other hypertensive patients suggested (*Proc Central Soc Clin Res* 15 72 [Nov] 1942) that factors other than the renal vasopressor system, presumably vasomotor, maintain the elevated arterial pressures found in the latter patients. An objective means of distinction between etiologically separate types of arterial hypertension may thus have been provided.

However, in individual cases some of the data overlapped between the groups. We have therefore used high spinal anesthesia as a means of functional renal denervation, having in mind the hypothesis that we might thus abolish the renal vasoconstriction which originates in vasomotor impulses while leaving unchanged that due to humoral pressor agents. The results of this study were described by Page (*Anesth & Analg*) and recently reported in more detail (Page, I H, Taylor, R D, Corcoran, A C, and Mueller, L B *Proc Central Soc Clin Res* 16 13 [Nov] 1943).

Analysis of the data was complicated by the changes in arterial pressure, common to normal people, so-called "neurogenic" hypertensives and, in less degree, "essential" hypertensives. A means of differentiating the arteriolar responses was provided by calculations of renal arteriolar resistance (Lampport, *J Clin Investigation* 22 461 [May] 1943). The results are summarized in the table. Briefly, subjects with "neurogenic" hypertension exhibited renal arteriolar vasodilatation when renal vasoconstrictor pathways were interrupted by spinal anesthesia, such decreased arteriolar resistance did not develop in equal degree in patients whose hypertension seemed of renal humoral origin.

Much more must be done before it can be claimed with complete certainty that essential hypertension is, in certain cases, vasomotor in origin. Thus, while discounting the evidence presented by Gregory, Lindley and Levine, we agree with the general thesis that in some hypertensives the disease is probably neurogenic. But in so doing, although proceeding by objective methods, we advance only a little further in certainty than does the general practitioner who has the hunch that the nervous system is overactive in certain hypertensives and proceeds to give them sedatives. We therefore hark back to an earlier impression (Corcoran, A C, and Page, I H *Arterial Hypertension*, THE JOURNAL, Feb 22, 1941, p 690) that "the clinical picture and course of each case of hypertension is probably a composite of the degree and kind of renal, endocrine and nervous participation." In particular, we do not agree that arterial hypotension due to spinal anesthesia in

patients with established and severe hypertensive arteriolar disease testifies to vasomotor origin of their condition. As a matter of fact, it is exactly such patients who consistently show evidences of humoral renal participation. It is only those in whom organic arteriolar disease is absent or minimal who consistently show evidences of vasomotor origin.

A C CORCORAN, M.D., Indianapolis

## ECG FOR ELECTROCARDIOGRAM

To the Editor—The word "electrocardiogram" and its abbreviation "ECG" have surely become sufficiently familiar to English speaking readers to make it unnecessary, improper and even at the present time highly objectionable to see the German abbreviation "EKG" appearing frequently in English speaking medical journals. In the journal of which I am editor, we hope to avoid this error. If it could be kept out of all American Medical Association journals this turn of the tide would soon spread to other American medical journals.

F B KRUNBILAR, M.D., Philadelphia

## Medical Examinations and Licensure

### COMING EXAMINATIONS AND MEETINGS

#### NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL Dec. 18 page 1076

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## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Workmen's Compensation Acts Cancer Allegedly Resulting from Trauma**—While bowling in 1933 the workman injured the ligaments of his left knee. Shortly thereafter he "bumped" his left knee when his foot slipped off the running board of a car. Apparently some condition developed that prevented him from working for a few years. In October 1934 he consulted Dr. Wirka in a neighboring state and it was discovered that he had "a giant celled benign tumor at the head of the tibia" of the left leg and the tumor was excised. From that time on he was examined two or three times yearly. In 1937 Dr. Wirka permitted him to return to work. In the course of his employment, Jan. 1, 1941 he slipped and fell on his left knee. He could not rise and was picked up by fellow workmen who rubbed his knee. He rested a short while and worked at less arduous tasks for the remainder of the work day. According to the workman the knee turned black and blue within ten or fifteen minutes after the fall and continued to be sore and swollen for four or five months, although the next day in reporting the accident to his employer the workman stated that he did not need a physician. He continued to work until May 1941 when he quit work for a few weeks to take treatments from a chiropractor. He visited Dr. Wirka in

June 1941 and a "biopsy was made showing an osteogenic sarcoma at the head of the tibia" On June 14 his left leg was amputated at the mid thigh. Subsequently he brought proceedings under the workmen's compensation act of Michigan for compensation, claiming that the sarcoma which necessitated the amputation resulted from the fall in his employment. From an award in his favor the employer and his insurance carrier appealed to the Supreme Court of Michigan.

The principal question was whether or not the evidence adduced at the hearing justified the deputy commissioner, department of labor and industry of Michigan, who conducted the hearing, in the finding inherent in the award of compensation that the cancerous condition which necessitated the amputation was caused by the single fall in the course of employment. At the hearing the workman called as a witness Dr Marcos Fernan-Nunez, a pathologist, who had never treated the workman, who had never seen him until he was called as a witness and who obtained the information on the basis of which he testified from testimony he heard in the case, from letters from Dr Wirka and from "slides" sent him by that physician. One slide it was claimed, was made of tissue removed from the tumor in 1934 and the other of tissue removed at the time of the amputation in 1941. This physician apparently attempted to testify that the industrial accident in this case had resulted in a cancer and that there was no relation between the so-called benign tumor which had been excised in 1934 and the cancer that made the amputation imperative. The employer and his insurance carrier objected to this physician's testimony on the ground that the slides were not introduced at the hearing and that the witness was basing his testimony on what another physician had told him. The deputy commissioner held that the testimony could not be considered unless the slides were introduced and a deposition of the physician who had written to the witness was obtained, neither of which was done, and subsequently the testimony of Dr Fernan-Nunez in this respect was withdrawn. The effect of this, said the Supreme Court,

as to leave the workman without any medical testimony except as herein noted, yet nevertheless the deputy commissioner awarded compensation. The workman, however, claimed that the exclusion of the testimony referred to in no way affected other testimony of the witness to the effect that a single trauma may cause cancer and that a benign tumor never becomes malignant. But, said the Supreme Court, this witness could not testify as to the character of the tumor excised in 1934, as the slide was not introduced and he never saw the tumor and had not observed the workman's knee during the years after the 1934 operation. Dr Wirka, who attended the plaintiff in 1934 and subsequent years and who performed the amputation, was called as a witness by the employer and his insurance carrier. He testified that he assisted in the operation in 1934 for the removal of the giant cell benign tumor and that he examined the workman from year to year thereafter and from a roentgenogram that was taken in 1940 prior to the alleged accident and introduced as an exhibit he testified

That is an x ray, AP and lateral views, upper three fifths of the tibia and fibula and lower one fifth of the femur. In the upper one fifth of the tibia there is an area of increased density in the posterior part of the bone with an area of rarefaction on the anterior surface plus another area of rarefaction on the posterior lip of the tibial articulation. There is irregularity of the joint outline, there being an enlargement of the lateral portion of the tibia table. The x ray represents a lesion showing both increased rarefaction and areas of hypertraction of lime salts.

This physician further testified that no single trauma had ever been proved to produce cancer or that it aggravated a benign tumor that had previously existed so as to cause it to become malignant, that when the workman came to him in June 1941 he made no mention of any accident in January of that year. Another physician called by the defendants testified that black and blue spots would not develop within fifteen minutes after a trauma.

The workman testified at the hearing on re-cross examination that he consulted a Dr Schroeder in 1934, before he consulted Dr Wirka, when he was having trouble with his knee

and that he brought suit against Dr Schroeder on account of his treatment or lack of treatment of the knee. An objection of the workman's attorney to this testimony was sustained. Thereon the attorney for the defendants stated that he would offer proof that the workman in connection with the same knee trouble started suit against Dr Schroeder and alleged in a sworn bill of complaint that Dr Schroeder did not properly diagnose his condition, that he was suffering from a malignant tumor and that that physician paid the workman \$1,000 in settlement of the suit. The deputy commissioner refused to permit any testimony along that line. Subsequently the attorney for the defendants filed a petition to take further testimony to show that the bill of complaint against Dr Schroeder for malpractice stated that "plaintiff's leg had become almost useless and permanently crippled" and also that the workman was examined in 1936 by two other physicians and roentgenograms of the workman's knee were examined by still another physician, all of which plaintiff had concealed at the hearing of the deputy commissioner. The petition in this respect of the defendant was denied. This was error, said the Supreme Court. It was the duty of the department of labor and industry to ascertain all pertinent facts.

The burden of proof, continued the Supreme Court, was on the workman. This court has been liberal in not rigidly insisting on adherence to the stricter rules of evidence in hearings before the department of labor and industry. Almost the entire testimony of Dr Fernan-Nunez became worthless as he was testifying in regard to slides about which he could not be cross examined and also in regard to what had been told him by another physician and what he had heard during the taking of testimony before a deputy commissioner. Such testimony was withdrawn. He did, however, state that a single trauma could cause cancer and that a benign tumor does not become malignant. However, the tumor if benign no longer existed as it had been excised and the cancer appeared in the same situs from which the tumor had been removed in 1934. The workman's own physician, Dr Wirka, however, testified wholly in favor of the employer and his insurance carrier. That physician stated that a single trauma could not cause cancer and that the workman had not told him that he had suffered from a fall in 1941. He further showed that it was necessary to examine the workman each year after 1934, and that in 1940 he took a roentgenogram of the workman and at the situs of the cancer there was an increased density of the posterior part of the bone, increased rarefaction and other unfavorable symptoms. It is very possible that the department of labor and industry might have reached an entirely different conclusion if it had the testimony before it in regard to the malpractice suit brought against Dr Schroeder and the testimony of the other physicians at the time. It seemed to the court that the employer and his insurance carrier were entitled to bring out those facts.

For the reasons stated, the award in favor of the workman was vacated and the cause was remanded to the department to enable the employer and his insurance carrier to present the testimony indicated—*Veck v Wesley Freight Co, 11 N W (2d) 213 (Mich, 1943)*

## Society Proceedings

### COMING MEETINGS

- Annual Congress on Industrial Health, Chicago, February 15 16 Dr Carl M Peterson, 535 N Dearborn St, Chicago 10, Secretary
- Annual Congress on Medical Education and Licensure, Chicago, February 14 15 Dr Victor Johnson, 535 N Dearborn St, Chicago 10, Secretary
- American Academy of Orthopaedic Surgeons, Chicago, January 22 26 Dr Myron O Henry, 825 Nicollet Ave, Minneapolis, Secretary
- Annual Forum on Allergy St Louis, Jan 22 23 Dr Jonathan Forman, 394 East Town St, Columbus, Ohio
- Clinical Orthopaedic Society, Chicago, January 22 26 Dr Myron O Henry, 825 Nicollet Ave, Minneapolis, Secretary
- Society of Surgeons of New Jersey, Atlantic City, January 29 Dr Walter B Mount, 21 Plymouth St, Montclair, N J, Secretary

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American J Digestive Diseases, Fort Wayne, Ind

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- Value of Proctoscopy in Diagnosis of Amebiasis R J Jackman and W L Cooper—p 365  
Pathogenicity of Intestinal Protozoa H W Soper—p 366  
Value of Cough Sign in Acute Appendicitis S Ben Asher—p 368  
Plan of Treatment for Diabetic Acidosis D P Foster W L Lawrie and J MacMillan—p 371  
Report of Case of Diverticulum of Stomach (Cardia) B Resnick—p 380  
Absorption of Iron from Ferrous Sulfate with Observations on Hemoglobin Changes and Influence of Certain Intestinal Protozoa Alice G Marsh Ruth M Leverton Thelma J McMillan and G R Underwood—p 382  
Planned Dietary in Treatment of Addison's Disease with Desoxycorticosterone Acetate T H McCavrick and Louise Balcock—p 385  
Further Studies on Relationship Between Composition of Diet and Metabolism of Ascorbic Acid I Patterson and Anne Bourquin—p 390  
Some Effects of Diets Rich in Glycerides of Saturated Fatty Acids on Intestinal Elimination H Helen I Wikoff J F Caul and B H Marks—p 395

#### American J Obstetrics and Gynecology, St Louis

46 479 622 (Oct.) 1943

- Control of Puerperal Infection in United States During Last Century C E Heaton—p 479  
Vitamin A During Pregnancy, Labor and Puerperium C J Lund and Marian S Kimble—p 486  
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Severe Preeclampsia with Separation of Retina P B Wahrsinger—p 581  
Fatal Staphylococcus Bronchopneumonia Following Ritual Circumcision I W Sauer—p 583

**Vitamin A During Pregnancy, Labor and Puerperium**—Lund and Kimble stress that pregnancy increases the need for vitamin A. There is no complete agreement about the magnitude of the need, the manner in which it shall be filled and the consequences of failure to meet it. The authors began their study in July 1940 and continued it through December 1942. Such a long period was necessary for the determination of seasonal variations as well as individual variations throughout pregnancy and the puerperium. Over 400 determinations of plasma vitamin A and an equal number of determinations of plasma carotene were made on 215 pregnant women who came from various social and economic classes. Plasma vitamin A values during pregnancy reflect the dietary intake of the woman. As the pregnancy progresses the vitamin A values decrease but the appearance of the decrease is delayed accord-

ing to the adequacy of the diet. There was no correlation between plasma vitamin A and carotene values. The relationship between these two substances in the blood stream remains obscure. Plasma vitamin A values were generally low in women who had not received antepartum care. The ingestion of an adequate diet according to accepted standards provides enough vitamin A to maintain normal blood values during the first trimester. During the second trimester 5,000 international units of vitamin A daily is necessary in addition to an adequate diet. This amount should be increased to 10,000 international units during the last trimester. Needs during the puerperium can usually be supplied by a good diet alone unless lactation is unusually abundant and prolonged.

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\*Food Borne Streptococcus Outbreak V A Getting S M Wheeler and G E Foley—p 1217  
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Use of Modern Laboratory Aids in Investigation of Typhoid Fever Outbreak E R Schlesinger—p 1257  
\*Epidemic Diarrhea of Newborn Report of Two Outbreaks P A Lembecke J J Quinnivan and N G Orchard—p 1263

**Food Borne Streptococcal Outbreak**—Getting and his associates report an unusual outbreak of scarlet fever which occurred in a Massachusetts town in July 1941. The outbreak was traced to food served at a church reunion. There were 24 cases of scarlet fever, 56 of septic sore throat, 7 of diarrhea, 4 of vomiting, 3 of nausea and 8 with miscellaneous complaints. The source of infection proved to be ground ham which had been cooked and prepared by a woman who was in the pre-eruptive stage of scarlet fever. Gastrointestinal symptoms were predominant. Laboratory analysis revealed Lancefield group A Griffith type 2, hemolytic streptococci from the ground ham, from the throat of the food handler and from the throats of 9 patients. The production of an enterotoxin substance from a ham substrate is discussed.

**Epidemic Diarrhea of the Newborn**—Lembecke and his associates report two outbreaks of diarrhea in newborn infants which occurred in a hospital in Rochester, N Y. The first epidemic involving 22 mild and 28 severe cases with 3 deaths, occurred in April and May. Two of the 3 deaths occurred in infants with birth injury or congenital abnormality. The diarrhea was significantly more frequent and more severe among infants artificially fed than among the breast fed. Opportunity for transmission of infection was afforded by contamination of nipples and formula. Delay and inadequacy in recognition and isolation of cases may have been contributory. The epidemic

came to a close following correction of these faults. A second epidemic of diarrhea of the newborn consisting of 21 mild, non-fatal cases occurred in the same hospital in July 1942. Illness was limited almost exclusively to breast fed infants. Opportunity for transmission of infection was afforded by probable contamination of a common vessel of 4 per cent boric acid used to cleanse the breasts. The epidemic came to a close after correction of this fault. The etiologic agent was not determined, but it is present in the intestinal and possibly the oral discharges of sick infants. The occasional introduction of the disease into a nursery, probably from an inapparent adult source, is difficult to prevent. Prevention and control depend on laboratory controlled methods of sterilizing nipples and formula, good nursing technique, prompt recognition, reporting and isolation of cases, and immediate epidemiologic investigation.

### Am J Roentgenol & Rad Therapy, Springfield, Ill 50 433-574 (Oct.) 1943

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- Acute Pneumonitis W G Scott and H L Jones Jr—p 444
- Chronic Cor Pulmonale L G Rigler and P Hallock—p 453
- Technic for Locating and Identifying Pericardial and Intracardiac Calcifications M C Sosman—p 461
- Ice Skater's Fracture Form of Fatigue Fracture C F Ingersoll—p 469
- Adenomatoma Report of 8 Cases L K Chont—p 480
- Pulmonary Metastasis and Pneumonitis Following Radiation Therapy for Cancer of Breast F P Pendergrass and G White—p 491
- Frequency, Clinical Course and Treatment of Metastases from Cancer of Breast J R Freid and H Goldberg—p 499
- Effect of Irradiation on Composition and Vascularity of Growing Rat Bones C J Hinkel—p 516
- Unusual Case of Pulmonary Osteoarthritis in Dog E G Wissing and I Weiss—p 527
- Relation of Focal Spot to Field Distribution Lillian E Jacobson—p 530

**Chronic Cor Pulmonale**—Rigler and Hallock define "cor pulmonale" as enlargement of the right side of the heart, with or without failure, initiated by increased resistance to blood flow within the lesser circulation as a result of pulmonary disease. The diagnosis of cor pulmonale presents many difficulties. To obtain definite objective evidence, recourse must be had to electrocardiography and roentgen examination, the latter being the most valuable. Enlargement of the right heart and failure is a comparatively frequent and important cause of death in chronic tuberculosis, in bronchial asthma, in emphysemas and in silicosis. It is the usual cause of death in pulmonary arteriosclerosis. Every case of chronic lung disease should be examined with this in mind. The characteristic enlargement of the pulmonary artery and the right ventricle can be demonstrated by roentgenoscopic and roentgenographic study in all positions. The roentgen findings are the most important means of establishing the presence of right heart enlargement before failure has supervened and are most helpful in the differential diagnosis.

**Pulmonary Metastasis and Pneumonitis Following Radiation Therapy**—Pendergrass and White attempted to determine whether radiation given prior to the formation of metastases will influence the type of shadow that the subsequent metastatic lesions will produce, and whether infiltrative metastases of the lung from cancer of the breast can be differentiated from chronic radiation pneumonitis. They studied 54 cases of cancer of the breast with three types of pulmonary metastases, the nodular, the infiltrative and the pleural. The roentgen appearance of the nodular type is that of varying sized, discrete, circumscribed, dense areas distributed throughout the parenchyma. The infiltrative type is characterized by closely spaced, coarse, linear shadows starting in the hilar region and progressing toward the periphery of the lung in a fan shaped fashion. The pleural type is seen as dense nodules or thickened localized areas on either the parietal or the visceral pleura or on both. Pleural effusion may obscure the nodules. In order to demonstrate the nodules it is necessary to withdraw the fluid and introduce air into the pleural cavity before making the roentgenograms. Large amounts of premetastatic irradiation to the lung fields are associated with the infiltrative type of metastases, while the nodular type usually occurs where little or no radiation has been given. The pleural type of metastases appears equally after all degrees of irradiation. Radiation

pneumonitis presented elevation of the dome of the diaphragm on the affected side, retraction of the mediastinal structures, contracted hemithorax and changes in the lung fields. In 3 cases with pneumonitis following irradiation they have observed emphysematous bleb formation on the affected side. The authors agree with Warren and Gates that the term radiation pneumonitis is preferable to that of pleuropneumonitis. The roentgen manifestations of radiation pneumonitis are in many instances similar to those found in infiltrative metastases from cancer of the breast. In many instances differentiation is impossible.

**Metastases from Cancer of Breast**—Freid and Goldberg present a study of patients with cancer of the breast who died while in the Radiotherapeutic and Surgical Services of the Montefiore Hospital for Chronic Diseases, New York City. In diffuse cutaneous lesions treatment is frequently fruitless. If the localized infiltrations are confined to a small area, radiotherapy is preferable to surgery. The authors used roentgen therapy generated at low or medium voltage. Skeletal metastases were observed in 81 out of 168 cases (48 per cent). Most skeletal metastases were multiple and were rarely preceded by metastases in other tissues. The following bones, among others, were involved in the order mentioned: pelvis, spine, femur, ribs, skull, humerus, scapula and clavicle. Irradiation of skeletal metastases produced results ranging from partial palliation of pain to permanent control of individual lesions. The authors found pulmonary pleural and mediastinal metastases in 47 per cent of 168 cases at Montefiore Hospital with only partial post-mortem confirmation. In a group of 131 postmortems on patients with cancer of the breast who died in Montefiore Hospital 89 per cent presented these types of metastases. There is no agreement as to beneficial effects of radiotherapy in the treatment of pulmonary metastases from mammary cancer. Regarding metastases to the central nervous system the authors say that treatment in advanced lesions is usually palliative. Patients with metastases who have not reached the menopause should receive roentgen castration. It is debatable whether such patients without metastases should be so treated.

### Annals of Internal Medicine, Lancaster, Pa.

19 567-706 (Oct.) 1943

- Some New Approaches to Physiology of Thyroid J H Means—p 567
- \*Radio Phosphorus—An Agent for Satisfactory Treatment of Polycythemia and Its Associated Manifestations. Report of Case of Polycythemia Secondary Possibly to Banti's Syndrome L A Erf and H W Jones—p 587
- \*Treatment of Meningococcus Carriers with Sulfadiazine F S Cheever B B Breese and H C Upham—p 602
- Hepatic Damage Associated with Sulfonamide Therapy in Infants and Children I Morphologic Pathology Maud L Menten and Marie A Andersch—p 609
- Id II Changes in Liver Function Test During Sulfonamide Therapy Marie A Andersch—p 622
- \*Value of Examination of Gastric Contents for Tubercle Bacilli J A Foley and J B Andosca—p 629
- Embolism and Thrombosis of Popliteal Artery—Diagnosis and Treatment J C Doane—p 634
- Changes of Water Tolerance Test in Hepatic Disease D Adlersberg and C L Fox Jr—p 642
- On Importance of Malaria as Cause of False Positive Serologic Reactions T R Dawber—p 651
- Thrombosis and Embolism of Abdominal Aorta I Greenfield—p 656

**Radio Phosphorus in Polycythemia**—Erf and Jones reported clinical and hematologic improvement in 6 cases of polycythemia following administration of radio phosphorus. The patients were maintained in clinical and hematologic remissions for nearly two years. Four of the 6 required no additional radio phosphorus, 1 was given one intravenous injection and another two courses of three injections each of radio phosphorus. The authors report 11 new cases of polycythemia in which radio phosphorus was used. All had received other forms of treatment previous to radio phosphorus, such as roentgen radiation, ultraviolet irradiation to the skin or to autotransfused blood, solution of potassium arsenite, phenylhydrazine and venesection, but none gave satisfactory remissions. The radioactive phosphorus solutions were given intravenously. The total dosage varied between 7 and 11 millicuries. The first significant hematologic responses occurred from sixty to one hundred days after the first injection. The patients gained weight, developed unusually good appetites and had clinical and hemato



logic remissions. The authors conclude that at the present radio phosphorus is the most convenient and satisfactory therapeutic agent for the treatment of polycythemia and its associated manifestations.

**Treatment of Meningococcus Carriers with Sulfadiazine**—Cheever and his associates report an outbreak of meningococcal infections which had occurred in a large naval construction training center during the winter of 1942-1943. Cases of meningitis and of uncomplicated septicemia were observed, in over 90 per cent of these a type I meningococcus proved to be the causative organism. The response to sulfadiazine therapy was gratifying, the mortality rate remained in the neighborhood of 5 per cent. A carrier rate determination on a representative sample of the camp's population gave a total incidence of 57.6 per cent. Men from a barrack known to have a high carrier rate were divided into two equal groups. These men lived, worked and messed together. On the first day nasopharyngeal cultures were taken on all men, those in the first group were given 3 Gm of sulfadiazine in divided doses on the first day and similarly 3 Gm on the second and 2 Gm on the third day, each man receiving a total of 8 Gm in seventy-two hours. The second group, serving as a control, was left untreated. On the fourth day cultures were made again on both groups, and urine specimens obtained from men who had received the drug. On the seventh day another nasopharyngeal culture was taken on each man. All of 161 carriers given 8 Gm of sulfadiazine had become negative by the fourth day. After an additional three days during which they received no further treatment 160, or 99.51 per cent, remained negative. The control group receiving no treatment showed a statistically significant increase in the total carrier rate during the first seventy-two hours, and during the second seventy-two hours a slight decrease. Sulfadiazine is apparently fully as effective as other members of the sulfonamide group in the treatment of meningococcus carriers.

**Tubercle Bacilli in Gastric Contents**—Foley and Andosca report that out of 639 cases with negative sputum 187, or 29.2 per cent, were found to be positive by gastric lavage, 32 nontuberculous subjects employed as controls were all negative. Guinea pig inoculation of gastric contents gives a higher percentage of positive results than direct microscopy. Gastric lavage is an aid not only in establishing the diagnosis of pulmonary tuberculosis but also in its differential diagnosis, treatment and prognosis. It is an accurate gauge of the infectiousness of a patient and helps to determine his relationship to society.

### Archives of Otolaryngology, Chicago

38 309-412 (Oct) 1943

- Effects of Nasal Inhalers on Erectile Tissues of Nose. Quantitative Studies. D B Butler and A C Ivy—p 309  
Osteoma of Frontal Sinus. Report of Case. W H Johnston—p 318  
Local Treatment of Acute Rhinitis with Sulfathiazole. E Ebert—p 324  
Fluid in Middle Ear. L Shalman—p 328  
Atresia of External Auditory Canal. L Cohen and S L Fox—p 338  
Use of Curare to Facilitate Endoscopy. Preliminary Report. S C Cullen and A J Trapasso—p 347  
Percussion Note of Maxillary Sinus. W Hewson—p 350  
Effect of Extrinsic Laryngeal Muscles on Voice Production. R R Sokolowsky—p 355  
Treatment of Certain Forms of Deafness by Means of Benzyl Cinnamate. Preliminary Report. J Jacobson—p 365  
Audiometric Effects of Voluntary Contraction of Tensor Tympani Muscles. H D Smith—p 369  
Paranasal Sinuses. S Salinger—p 373

**Benzyl Cinnamate for Certain Forms of Deafness**—Jacobson noted in the course of treatment with benzyl cinnamate of corneal opacities in 2 patients with interstitial keratitis and deafness a regression of the corneal lesions and improvement in hearing. He next treated 45 patients with deafness who had failed to respond to the classic method of treatment. Each patient received one intramuscular injection of 0.33 to 1 cc of a 3.2 per cent solution of benzyl cinnamate for a period of twelve days. He was then allowed a period of rest of ten to fifteen days. Thereafter the injections were resumed, and after the third series of injections the patient was given one month's rest. The same cycle may be repeated after an interval of about two months. A follow up of 32 patients revealed that 17 stated

that their hearing had improved, of the 24 who complained also of tinnitus, 2 reported its disappearance, 7 stated that it had diminished, while 15 observed no change. Dizziness which had accompanied the deafness in 9 of the 32 patients disappeared in 3 and diminished in 5.

### Archives of Surgery, Chicago

47 319-418 (Oct) 1943

- Caution Against Too Liberal Use of Citrated Blood in Transfusions. J Bruneau and E A Graham—p 319  
Effects of Morphine in Experimental Shock Due to Hemorrhage. A Blalock—p 326  
Arterial Blood Supply of Breast. Revised Anatomic Data Relating to Reconstructive Surgery. J W Malinac—p 329  
Adventitious Bursas. R M Buck, J R McDonald and R K Ghormley—p 344  
Effect of Sulfathiazole Administered Orally and Sulfanilamide Implanted Locally on Contaminated Wounds. Experimental Study. J W Lord Jr, A IL Blakemore and P L Stefkó—p 352  
Hemangioma of Synovial Membrane of Knee Joint Cured by Synovectomy. P H Harmon—p 359  
Spontaneous Closure of Arteriovenous Fistula. Report of Case. R F Barber and J L Madden—p 364  
Role of Chemical Laboratory in Diagnosis of Neoplastic Diseases of Bone. Helen Quincy Woodard—p 368

**Sulfathiazole Administered Orally and Sulfanilamide Locally**—During a study of a method of bridging a gap in a severed femoral artery in dogs, Lord and his collaborators accumulated data concerning the value of sulfanilamide implanted locally and of sulfathiazole administered orally. The right femoral artery was exposed in 20 animals under unsterile conditions, the incision being 10 cm in length. The artery was isolated for 2 cm and divided between transfixion ligatures. Twenty-four hours later the animal was again anesthetized and after preliminary irrigation of the femoral wound on the right side with saline solution a 10 to 12 cm segment of the left femoral vein was removed under aseptic conditions. The vein was set aside, care being taken to keep it sterile, and the femoral wound on the right side was excised. The wound was irrigated with 250 cc. of saline solution. The two tube non-suture technic was then carried out, vitallium tubes 3 mm in outside diameter being inserted into the segment of the left femoral vein. The wound was closed. After seven days all wounds were opened and the anastomoses examined to determine blood flow. The anastomosis was resected and examined for thrombosis. In 10 animals the Carrel suture technic was substituted for the anastomosis of the segment of vein to the cut ends of the right femoral artery. A second variation was that the wounds were studied for fourteen days instead of seven. Into alternate wounds of all 30 dogs 15 Gm of powdered sulfanilamide was sprinkled at the time of the arterial anastomosis. To 10 of the 20 dogs for which the two tube technic was used 1 Gm of sulfathiazole was administered orally twice daily. To all 10 of the dogs for which the suture technic was used 1 Gm of sulfathiazole was administered similarly. Therapy with sulfathiazole was begun at the time of the unsterile division of the femoral artery. In the undebrided wound local implantation of sulfanilamide was of little value. In the debrided wound sulfanilamide applied locally was of value in the healing and in the success of the anastomosis. Sulfathiazole administered orally was slightly more efficacious than sulfanilamide implanted locally. The most satisfactory healing of wounds and the greatest number of successful anastomoses resulted from the combined use of sulfathiazole orally and sulfanilamide locally when careful debridement was done.

### Florida Medical Association Journal, Jacksonville

30 89-132 (Sept.) 1943

- Medical Stewardship in War and Peace. C W Roberts—p 103  
Appendicitis. Results of Surgical Treatment Under Varying Conditions at Duval County Hospital. J B Stewart—p 110  
Emergency Medical Management in Great Britain. A J Logie—p 113

30 133-172 (Oct.) 1943

- The Doctor in the War Effort. S W French—p 145  
Preliminary Study in Use of Continuous Caudal Anesthesia. J R Graves—p 148  
Aqueous Vanadium Tetrachloride and Its Possible Use in Syphilology. R S Leopold and C B Pollard—p 150

**Journal Industrial Hygiene & Toxicology, Baltimore**  
25 323-380 (Oct) 1943

- Physiologic Response of Animals to Cyclohexane, Methylcyclohexane and Certain Derivatives of These Compounds II. Inhalation J. F. Trice, W. E. Critchfield Jr. and K. V. Kutzmiller—p. 323
- \*Determination of Monomeric Styrene in Air V. K. Rowe, G. J. Atchison, E. N. Luce and E. M. Adams—p. 348
- Determination of Oxides of Nitrogen in Air J. Cholak and R. R. McNair—p. 354
- Nitrite Field Method for Determination of Oxides of Nitrogen F. A. Patty and G. M. Patty—p. 361
- Acute Toxicity of Vapors of Certain Solvents Containing Appreciable Amounts of Benzene and Toluene J. L. Svirbel, R. C. Dunn and W. F. von Oettingen—p. 366
- Effects of Repeated Exposures of Rats to Vapors of Monoalkyl Ethylene Glycol Ethers. II W. W. Werner, C. Z. Nawrocki, J. I. Mitchell, J. W. Miller and W. F. von Oettingen—p. 374

**Determination of Monomeric Styrene in Air**—Rowe and his associates point out that the increased production of monomeric styrene for the manufacture of Buna S rubber, together with its growing use in other fields, has placed more and more men in contact with this material. Extensive laboratory work on animals has led to the proposed maximum allowable concentration of 2 mg per liter (approximately 400 parts per million) for repeated eight hour exposures. Chemically monomeric styrene is vinyl benzene. Several physical methods for the analysis of air for monomeric styrene vapor are possible. The apparatus and methods described by the authors have been used and found to be satisfactory for the trapping of monomeric styrene vapor from the air in preparation for the determination by the infra-red, ultraviolet or nitration method. The ultraviolet method for the determination of monomeric styrene is applicable in the presence of benzene, ethylbenzene, toluene, butadiene and vinyl cyanide. The infra-red method is applicable in the presence of benzene and ethylbenzene, but the presence of other impurities limits its use. The nitration method is most suitable for the majority of laboratories. The monomer is nitrated in a carbon tetrachloride solution, the acid layer extracted and diluted to volume with water, and the yellow color developed is measured with a suitable colorimeter.

**Journal of Pediatrics, St Louis**

23 371-496 (Oct) 1943

- Blood Sucking Vectors of Encephalitis. Experimental Transmission of St. Louis Encephalitis to White Swiss Mice by American Dog Tick, *Dermacentor variabilis* Say. R. J. Blattner and Florence M. Heys—p. 371
- Experimental Investigation of Measles G. Rake—p. 376
- Early Radiologic Recognition of Mitral Valve Disease B. S. Epstein—p. 381
- Effect of Illness and Other Factors on Appearance Pattern of Skeletal Epiphyses I. W. Sontag and Janet Lipford—p. 391
- Case of Vitamin D Deficiency Associated with Cirrhosis of Liver and Dyscrasia of Calcium and Phosphorus Metabolism H. F. Fraser—p. 410
- Studies in Hormone Therapy I. Evaluation of Growth Hormone Treatment A. A. Strauss and E. H. Watson—p. 421
- Protection of Infant Against Diphtheria During First Year of Life Following Active Immunization of Pregnant Mother J. Liebling and H. E. Schmitz—p. 430
- Evaluation of Blood and Urinary Thymine Determinations in Vitamin B<sub>12</sub> Subnutrition R. A. Benson, C. M. Witzberger and L. B. Slobody—p. 437
- Comparative Effects of Ammoniated Mercury, Sulfathiazole and Soap and Water on Surface Bacteria of Newborn Infant W. R. MacLaren—p. 446
- \*Treatment of Cryptorchism. Report on Treatment in Thirty Eight Cases with Chorionic and Pituitary Gonadotropin and Testosterone F. E. Harding—p. 451
- Peptic Ulcers in Infancy and Childhood. Postmortem Studies of 8 Cases, 1 Case of Possible Poisoning by Rhubarb Miriam C. Benner—p. 463

**Protection of Infant Against Diphtheria by Immunization of Mother**—Studies on the occurrence of diphtheria antitoxin in the blood of pregnant mother and infant were presented by Liebling and Schmitz in previous articles. In this paper they present additional observations on nonimmunized and actively immunized mothers and relate what effect such immunization had on the infant during the first year of life. They conclude that active immunization of the pregnant mother results in an increased placental transfer of passive immune

bodies to the offspring. The increase in passive immune bodies to the offspring is prolonged sufficiently to increase the protection during the first year of life. Schick tests on pregnant mothers immune to diphtheria acted as secondary antigens, causing increased antitoxin formation. This was sufficient to prolong the passive immunity in the offspring of this group of mothers. Schick tests on infants immune to diphtheria did not increase their antitoxin titers. The decline of passive immune bodies in the offspring is two to five times greater than the decline of active immune bodies in the respective mothers.

**Treatment of Cryptorchism**—Harding reports observations on 38 cases of cryptorchism which were treated with chorionic and pituitary gonadotropin and with testosterone. Cryptorchism without mechanical obstruction may be corrected with endocrine therapy. The testes descended in 76 per cent of the patients in this series. With endocrine treatment obstruction can be diagnosed early so that necessary surgery can be performed not later than the prepuberty period, thus preventing the atrophy which occurs in the testis allowed to go through puberty undescended. Certain mental and physical conditions make it advisable to treat some of these boys at a younger age. When descent does not follow treatment, orchiopexy must be used to prevent sterility, hypogonadism, complications and possibly malignancy. Operation should be facilitated by treatment that lengthens the spermatic cord and enlarges the scrotum and testis. There was no harm to the testes regardless of the age at which the boy was treated.

**Minnesota Medicine, St Paul**

26 849-936 (Oct) 1943

- Recent Advances in Our Knowledge of Coronary Sclerosis and Its Bearing on Clinical Management of Patients A. R. Barnes—p. 863
- Hypertension Heart G. Fahr—p. 867
- Psychosomatic Aspects of Hypertension. Review of Literature W. H. Hengstler—p. 870
- Medical Management of Early Cases of Hypertension S. G. Sax—p. 874
- General Care of the Aged J. F. Norman—p. 876
- Nutritional Management of the Aged E. L. Tuohy—p. 881
- Surgical Treatment of the Aged O. T. Clagett—p. 884
- Studies on Diagnosis and Treatment of Epidemic and Experimental Poliomyelitis with Poliomyelitis Antistreptococcal Serum. Summary of Results E. C. Rosenow—p. 890

**New England Journal of Medicine, Boston**

220 605-638 (Oct. 14) 1943

- Global Malaria J. S. Simmons—p. 605
- Newer Concepts of Gonorrhea S. N. Vose—p. 610
- \*Supralevator Abscess E. A. Gaston and L. O. Warren—p. 613
- Intravenous Use of Lysates C. J. H. Nicholson—p. 619
- Treatment of Sinusitis R. L. Goodale—p. 622

229 639-666 (Oct. 21) 1943

- War-time Responsibilities of United States Public Health Service W. F. Draper—p. 639
- Effect of Sulfanilamide Powder on Healing of Sterile and Infected Wounds with Special Reference to Tensile Strength and Ascorbic Acid Content in Scar C. M. Jones, M. K. Bartlett, Anna E. Ryan and Gladys D. Drummer—p. 642
- Rhinocleroma. Report of Case E. Kellert—p. 647
- Prolonged Ureteral Obstruction with Recovery Following Administration of Sulfadiazine and Sulfathiazole S. J. Sugar—p. 651
- Pancreatic Insufficiency and Celiac Syndrome S. Farber—p. 653

**Supralevator Abscess**—According to Gaston and Warren, infections occurring about the rectum and anus are classified as infralevator or supralevator according to their anatomic relation to the pelvic diaphragm. Infralevator infections are relatively frequent and their surgical treatment is well understood. Supralevator abscess is a rare disease. It seems logical to assume that such infection usually arises in the mucocutaneous line and is carried by lymphatic drainage to the supralevator space. The clinical picture is essentially one of prolonged sepsis associated with a perirectal mass and, eventually, with pelvic pain and low intestinal obstruction. Male patients frequently present symptoms of obstruction of the bladder neck of greater or lesser severity. The diagnosis is not difficult if the condition is kept in mind. Treatment consists in adequate surgical drainage. Preliminary sigmoidostomy is occasionally indicated in cases seen late in the disease or in the presence of fistula.

## New York State Journal of Medicine, New York

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- Extent of Syphilis Problem at Beginning of World War II R A Vonderlehr and Lida J Usilton—p 1825  
Venereal Diseases Navy Problem L A Shifrin—p 1829  
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Clinical Types of Coronary Insufficiency and Their Recognition R L Levy—p 1836  
Principles Underlying Operative Approach to Treatment of Myocardial Ischemia C S Beck—p 1841  
Diagnosis of Pancreatic Disease J H Pratt—p 1847  
Surgical Therapy for Patent Ductus Arteriosus R E Gross—p 1856

**Surgical Therapy for Patent Ductus Arteriosus**—Gross states that closure of the ductus arteriosus has now been performed on 50 patients varying in age from 11 months to 47 years. There were only 2 deaths. The results of the operation were beneficial. Patients who were previously backward in their physical development had a subsequent gain in weight. Those who had varying degrees of cardiac disability or limitation of their physical activities have spontaneously undertaken more physical exertion after operation and had disappearance of their cardiac symptoms. In the early part of the series some persons were left with a minimal fistula. The large opening was reduced to a very small one but was not completely shut off. This failure of the method to produce absolute closure in some instances has now made it advantageous to resort to the more difficult but ideal operation of complete division of the ductus. This has been successfully accomplished nine times without complication and without mortality.

## Pennsylvania Medical Journal, Harrisburg

47 1-96 (Oct.) 1943

- Surgical Principles of Rhinoplasty L. Felderman—p 13  
Outline of Plan and Work of Division of Cancer Control of Pennsylvania Department of Health S P Keimann—p 21  
Percussion Sign in Coronary Disease A S Gabor—p 25  
Viruses Fungi Protozoa and Insects Preliminary Report with Review of Literature A E Taft—p 26  
Soft Tissue Injury Coincident with Fractures H R Owen and W H Erb—p 33  
Atypical Scabies Diagnosis by Scrape and Smear Method R Friedman—p 39  
Postoperative Wound Infections in Small Hospital C H Smith—p 42  
Nutrition Today Application to Clinical Practice of Laboratory Methods for Determining Nutritional Status Pauline Beery Mack—p 44  
Protein Metabolism R H McCoy—p 49

## Public Health Reports, Washington, D C

58 1497 1532 (Oct 8) 1943

- \*Study of Outbreak of Food Poisoning in Hospital in Galveston Texas L L Lumsden C A Nau and F M Stead—p 1497  
Harborage of Rattus Rattus Alexandrinus B K Milmore—p 1507  
American Q Fever Occurrence of Rickettsia Diaporica in Amblyomma Americanum in Eastern Texas R R Parker and G M Kohls—p 1510

58 1533 1572 (Oct 15) 1943

- Automatic Control of Exposure in Photofluorography R H Morgan—p 1533  
Successful Treatment of Granulocytopenia and Leukopenia in Rats with Crystalline Folic Acid F S Daft and W H Schrell—p 1542  
War and Distribution of Physicians G St J Perrott and B M Davis—p 1545  
Frequency and Duration of Disabilities Causing Absence from Work Among Employees of Public Utility 1938 1942 W M Grafton—p 1554

**Outbreak of Food Poisoning in a Hospital**—Lumsden and his associates report an outbreak of food poisoning in a large general hospital with 390 patients and 610 personnel having meals regularly in the hospital. About 22 per cent of the patients and over 50 per cent of the personnel were attacked. The clinical manifestations in general were very similar with nausea, vomiting, abdominal cramps and purging predominant. The outbreak was widely distributed among the patients and personnel but was confined to those who ate chicken prepared in one common kitchen and served on July 6 1943 at the noon-day meal. The hygienic and sanitary conditions under which the foods in the implicated meal were prepared, stored and distributed were found to be unsatisfactory. Chicken salad was

the sole medium of conveyance. The causative agent was a bacterial toxin produced by *Staphylococcus aureus* of the specifically enterotoxin forming type. The introduction of *Staphylococcus aureus* on or into the chicken may have been by human hands, dropping perspiration, floating droplets from the nose or throat of some of the food handlers in the kitchen, by flies, roaches, mice, or other vermin, or through air currents. Most probably it was introduced by human hands. The chicken probably became contaminated with the staphylococci during the process of handling and exposure of the meat in the kitchen. There was a tremendous multiplication of the infecting organisms in the meat during storage in the refrigerator and during the several hours that the meat was being made up into salad in the high temperature of the kitchen. The detection of the staphylococci in the bones from which the meat for the salad was removed eliminates the mayonnaise dressing, the eggs and the celery used in the salad as being together or separately a factor in the causation of the outbreak. The temperature of the refrigerator room in which the large mass of hot chicken was placed for storage was not maintained at a sufficiently low degree.

## Surgery, Gynecology and Obstetrics, Chicago

77 449-556 (Nov) 1943

- Value of Vaginal Smear in Diagnosis of Uterine Cancer J V Meigs Ruth M Graham M Fremont Smith I Kapnick and R W Rawson—p 449  
Surgical Treatment of Acquired Aneurysm and Arteriovenous Fistula of Peripheral Vessels Reviews of 67 Cases J deJ Pemberton and B M Black—p 462  
New Test for Pancreatic Function II Experimental Observations H L Popper W H Olson and H Necheles—p 471  
Studies on Therapy of Hemorrhagic Shock II Effects of Iso Osmotic and of Concentrated Serum and Plasma in Dehydrated Dogs S O Levinson Martha Janota R E Weston and H Necheles—p 475  
Wound Healing Experimental and Statistical Study V Bacteriology and Pathology in Relation to Suture Material S A Localio W Casale and J W Hinton—p 481  
Horizontal Pin Fixation for Fractures of Mandible Using Pin Guide D F Pincock—p 493  
Protruded Intervertebral Disks J G Love and M N Walsh—p 497  
\*Coagulum Contact Method of Skin Grafting as Applied to Human Grafts M E Sano—p 510  
Umbilical Hernia in Bad Risk Patient W A White Jr—p 514  
Half Ring Splint for Fractures of Femur and Tibia and for Other Disabilities of Lower Extremity C S Young—p 518  
Reconstruction of Breast Deformities H May—p 523  
Use of Fascial Sutures in Inguinal Hernia C C Burton—p 530  
Living Fascial Sutures in Repair of Inguinal Hernia W J Ryan—p 535  
Pregnancy in Monkey After Removal of Fetus G van Wageningen and W H Newton—p 539  
Pyogenic Sepsis Survey of 255 Cases H Neuhoef and A H Aufses—p 544  
Manual Removal of Placenta L D Odell and W F Hovis—p 553

**Coagulum Contact Method of Skin Grafting**—Sano directs attention to a new method of skin grafting. Five cc. of patient's blood is drawn into a 10 cc. syringe containing 1 mg of heparin dissolved in 1 cc of Tyrode's solution. The blood is centrifuged and the plasma transferred to a small 5 cc. test tube. One and five-tenths cc. of Tyrode's solution is added to the remaining red cells and buffy coat (white cells) or to the buffy coat alone if it is convenient to separate it from the erythrocytes. If the buffy coat has not been separated from the red cells, the mixture must be centrifuged and the supernatant fluid removed to another sterile tube. If the buffy coat alone is used, centrifugation is not necessary. The fluid is referred to as "cell extract." The coagulum contact method can be used for thin split grafts or full thickness grafts. The graft is turned upside down on a sterile piece of gauze. With a camel's hair brush the under side of the graft is moistened lightly with the cell extract. With another brush the plasma is painted on the recipient area. The graft is quickly fitted into the recipient area. The edges are adjusted and slight pressure with the forceps is applied to the graft to assure good contact. It adheres within a few minutes. A single strip of boric acid gauze is lightly placed over the graft to protect it from infection and drying. No other dressings are applied, no stitches are needed. The author presents 10 cases in which this method was used.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Medical Journal, London

2 381-410 (Sept 25) 1943

- \*Methods of Artificial Respiration D G Cordier—p 381  
 Management of Acute Pleural Empyema P R Allison—p 383  
 Ear, Nose and Throat Casualties in General Hospital in Middle East F G Collins—p 386  
 Low Spinal Anesthesia During Labor in Cases of Cardiac Failure H Burton—p 389  
 Effect of Diet on Concentration of Cholesterol in Blood and Bile Nancy Gough—p 390

2 411-442 (Oct 2) 1943

- Prospect in Therapeutics H Dale—p 411  
 Cutaneous and Conjunctival Diphtheria Series of Cases H C M Williams—p 416  
 Acute Menkemic Myeloid Leukemia B L Della Vida and M C Connell—p 417  
 Dietary Factor in Reproduction and Lactation M B Richards—p 418  
 Metallic Internal Fixation of Fractures in Air Crew Cases N Vere Hodges—p 419  
 Medical Service and Social Change Some Reflections and Convictions Dawson of Penn—p 429

**Artificial Respiration**—All methods of artificial respiration must (1) give sufficient pulmonary ventilation, (2) stimulate the heart and circulation to help respiratory exchanges and transport of oxygen to tissues and (3) be harmless, easy of execution and rapid in attaining results. The physiologic efficiency of the methods can be tested by (1) determining the pulmonary ventilation and respiratory exchange, (2) radioscopic and radiographic control, (3) finding the manometric values of cardiac pressures during inspiration and expiration and (4) controlling blood movement in the circulatory system. All experimenters agree that Silvester's method introduces in the respiratory tract of the apparently dead subject the biggest volume of air. However, determination of ventilation is only one criterion in judging the efficiency. The choice of the method depends also on the causes of asphyxia. In Eve's method the patient lies on a rocking stretcher, the weight of the abdominal contents pushes the diaphragm alternately up and down. Eve believed that this movement of the diaphragm was sufficient to ensure pulmonary ventilation of normal value. Eve's rocking method has great practical advantages, but the experimental criteria employed to study its physiologic efficiency seems insufficient to prove its superiority over other methods of artificial respiration.

2 443-472 (Oct 9) 1943

- \*Infectious Mononucleosis, with an Account of Epidemic in an Emergency Medical Service Hospital J P A Halcrow, L M Owen and N O Rodger—p 443  
 New Approach to Treatment of Early Syphilis by Intensive Therapy T R L Jones and F G Maitland—p 448  
 Assessment of Level of Nutrition Revised Procedure for Estimation of Amino Acid in Urine by Thiochrome Test Y L Wang and L J Harris—p 451  
 Local Oral Medication with Sulfanilamide in Lozenge Form P Garson—p 452  
 Hypochromic Anemia in Adolescent Males M L Thomson—p 454

**Infectious Mononucleosis**—Halcrow and his associates point out that Paul and Bunnell discovered in 1932 that the serum of patients with infectious mononucleosis contains an antibody which agglutinates sheep's red cells in high dilution and so did much to establish it as a separate entity. The disease may vary in severity from symptoms so mild as to pass unrecognized to an acute illness with severe sore throat, glandular enlargement and pyrexia, followed by a long period of debility and frequent exacerbations. The clinical manifestations are protean, and diagnosis on clinical grounds alone may be almost impossible, examination of a blood smear and a Paul-Bunnell test, however, will confirm the diagnosis. The authors observed in an Emergency Medical Service Hospital in August 1942 an epidemic of infectious mononucleosis presenting some unusual features. It was apparently widespread in surrounding districts. The unusual features in this epidemic were (a) a high percentage of infected persons in the adult population,

(b) the occurrence of cases with hematologic and serologic findings and no clinical manifestations and (c) the fact that blood and serologic changes may precede clinical manifestations. The treatment was symptomatic. Two anginous patients were given sulfapyridine, but no favorable response was obtained. As the granulocytes are reduced in infectious mononucleosis and many show toxic changes, it is not surprising that sulfonamides do not give good results.

## Lancet, London

2 401-432 (Oct 2) 1943

- Medicine and Community Task of Statesmanship Speech to British Medical Association Dawson of Penn—p 401  
 \*Pathology of Acute Hepatitis Aspiration Biopsy Studies of Epidemic, Arsenotherapy and Serum Jaundice J H Dible, J McMichael and S P V Sherlock—p 402  
 Burns Treated with Viacutan Special Reference to Free and Hand F Pick and D Barton—p 408  
 \*Thrombocytopenic Purpura H Evans and K M A Perry—p 410  
 Two Complications with Trichlorethylene Anesthesia M W Goldschmidt—p 414

**Aspiration Biopsy in Acute Hepatitis**—Dible and his associates performed biopsies on the livers of 14 patients with epidemic hepatitis, of 35 with jaundice resulting from arsenotherapy, of some with hepatitis resulting from the inoculation of mumps convalescent serum and of 2 in whom jaundice followed serum transfusion. The technique they used was essentially like that described by Iversen and Roholin of Denmark in 1939. They illustrate degrees of liver damage by reference to typical cases. The inflammatory lesions may be diffuse, zonal or mixed. Jaundice persisting over two weeks is more likely to be due to a zonal lesion. Diffuse hepatitis usually heals completely and rapidly. When the disease runs a longer course some residual fibrosis in the portal zones may still be present after apparent clinical cure. The authors found no evidence that there is a form of jaundice due to duodenal catarrh and obstruction of the common bile duct by mucus. The process of development of acute and subacute necrosis and cirrhosis was followed. Histologic criteria were not found for the differentiation of the lesions resulting from epidemic hepatitis, arsenotherapy and serum inoculations.

**Thrombocytopenic Purpura**—Evans and Perry studied 75 cases of thrombocytopenic purpura at the London hospital between 1927 and 1938. Thirty of the patients were of the prepubertal age. These were equally divided between the sexes, 10 of them recovered spontaneously, splenectomy was successful in 5 males and unsuccessful in 4 females, and the mortality during the period of observation was 16 per cent. Of the 45 patients who were affected after puberty, 38 were women. Only 1 female made a spontaneous recovery, splenectomy was successful in 2 males and in 7 out of 13 females, and the mortality during the period of observation was 40 per cent. Half of the deaths were due to subdural hemorrhage. In the whole series splenectomy was successful in 7 out of 7 males and in 7 out of 17 females, there were 3 operative deaths, splenectomy may be a life saving measure and is sometimes advisable in the hope of preventing subdural hemorrhage. One patient showed a striking improvement during pregnancy. Thromboticosis was associated with the purpura in 4 cases.

## Medical Journal of Australia, Sydney

2 201-220 (Sept 11) 1943

- \*Congenital Defects in Infants Following Infectious Diseases During Pregnancy, with Special Reference to Relationship Between German Measles and Cataract, Deafmutism, Heart Disease and Microcephaly and to Period of Pregnancy in which Occurrence of Rubella is Followed by Congenital Abnormalities C Swan A L Tostevin B Moore, Helen Mayo and G H B Black—p 201  
 Lagrange Operation for Glaucoma E T Smith—p 211  
 Outbreak of Food Poisoning Due to Staphylococci W J Scott and D F Stewart—p 211

**Congenital Defects in Infants Following Infectious Diseases During Pregnancy**—Swan and his associates point out that Gregg in 1941 reported 78 cases of congenital cataract. With few exceptions the mothers of these infants had suffered during the early stages of pregnancy from an exanthematous disease diagnosed as rubella (German measles). Many of the

babies were of small size, ill nourished and often difficult to feed. In 44 of them a congenital lesion of the heart was detected. The cataracts were of the dense nuclear type, they were bilateral in 62 and unilateral in the remainder. In 11 of the 16 monocular patients the affected eye was microphthalmic. The authors decided to investigate this problem in South Australia. A circular letter embodying the main facts of Gregg's paper and inviting cooperation in the investigation was sent to all medical practitioners in the state. When children, whether suffering from congenital abnormalities or not, had been born of mothers who had suffered from acute exanthems during pregnancy it was asked that the questionnaire be filled in. When ever practicable, permission was requested to interview the mother with regard to her illness during pregnancy and to submit the baby to examination. Of 61 infants examined, 35 were found to have congenital defects. The mothers of 49 infants had suffered during pregnancy from rubella, 4 had no knowledge of any exanthem during this time, 9 contracted measles during pregnancy and 2 suffered from mumps. In the cases of rubella during pregnancy, 31 of the infants born subsequently exhibited congenital defects. The abnormalities included cataract, deafmutism, heart disease, microcephaly and mental retardation. With two exceptions all of the 31 mothers with congenitally defective children had contracted rubella within the first three months of pregnancy. Four cases of congenital cataract are described, in some instances associated with other defects, the mothers denied all knowledge of an exanthem during pregnancy. No congenitally defective babies were born subsequent to the occurrence of measles in pregnancy. Congenital corneal opacity appeared following mumps in pregnancy.

### Medicina, Buenos Aires

3 387-518 (July) 1943 Partial Index

- \*Electrocardiograms in 30 Cases of Wounds of Heart and of Pericardium. L. Herve and A. Forero Sarabia—p. 387  
Hydatidosis and Pulmonary Tuberculosis. M. M. Brea—p. 424

**Electrocardiograms in Wounds of Heart and of Pericardium.**—Herve and Forero Sarabia studied electrocardiographic changes of 30 persons who were operated on for wounds of the heart or the pericardium. The electrocardiographic alterations which appear in the course of the first two weeks after a surgical operation are similar to those seen in acute pericarditis. They are caused by pericarditis or a hemopericardium which is always present in these cases. The electrocardiographic changes which depend on the myocardial lesion, namely inversion of the T<sub>1</sub>, T<sub>2</sub> and T<sub>4</sub> waves in wounds of the left ventricle and of the T<sub>1</sub>, T<sub>2</sub> and sometimes T<sub>4</sub> waves in wounds of the right ventricle, appear after subsidence of pericardial inflammation. An early diagnosis of the site of the wound in the heart is possible (1) before the development of pericarditis if hemopericardium does not exist and (2) when the bundle of His is injured, which is a rare occurrence. Signs of localization of wounds are more frequent, more accentuated and of longer duration in the case of wounds of the left ventricle than when the wound is in the right ventricle. Transient changes of the P wave of the type of those observed in pericarditis in the ventricular complex are frequently observed in auricular wounds. The little certainty that exists in localizing exactly the myocardial lesion during the operation is the probable cause of the occasional discrepancy between the clinical data and the electrocardiogram. The latter has no prognostic value in wounds of the heart and of the pericardium.

### Medicina Española, Valencia

6 623 752 (June) 1943 Partial Index

- \*Lymphogranulomatous Appendicitis. Case F. Martin Lagos—p. 623  
Arterial Blood Pressure in Hyperfunction and Hypofunction of Adrenals. M. Schachler—p. 659

**Lymphogranulomatous Appendicitis.**—According to Martin Lagos lymphogranulomatous appendicitis is extremely rare. The case reported is the third in the medical literature. The author's patient complained of recurrent abdominal attacks, loss of weight, lack of appetite and rheumatic pains. He also gave a history of a chancre and inguinal adenopathy four years previously. These lesions disappeared spontaneously. The Wassermann test was negative. The removed appendix was

entirely sclerotic. The cecum and ileum were normal. The abdominal incision developed repeated infections. The Frei test was positive. Repeated administration of sulfanilamide failed to control the infection. Roentgen therapy was effective in controlling the infection. Sulfanilamide or lymphogranulomatous antigen is indicated in the early stage of adenopathy in cases in which the Frei test is positive. The test is also indicated in recurrent infection of the appendectomy wound. A positive test in such cases is an indication for roentgen therapy.

### Archiv für klinische Chirurgie, Berlin

203 159-342 (June 15) 1942

- \*Experiences with Surgical Therapy of Rectal Cancer. 407 Cases Observed Between 1926 and 1940. R. von Oppolzer and L. Nitsche—p. 159  
Comparison of Simple Methods for Testing Circulation Before Surgical Interventions. L. Zeus—p. 206  
Blood Sugar and Circulation. Comparative Studies in Artificially Increased Intracranial Pressure. H. Bierhaus—p. 231  
\*Experimental Investigations on Causes of Centrogenic Hypertension in Intracranial Increase in Pressure. H. Bierhaus—p. 257  
Arch. Fractures of Second Cervical Vertebra. F. Jimeno-Vidal—p. 291  
Traumatic Intracranial Hemorrhages. F. Jaeger—p. 304  
Significance of Spina Bifida Occulta for Hereditary Anlage to Labio-maxillopalatine Cleft. C. H. Schroder and H. J. Hillenbrand—p. 328

**Surgical Therapy of Rectal Cancer.**—Von Oppolzer and Nitsche report 407 cases of rectal cancer that were seen at the First Surgical Clinic of Vienna during the years 1926 to 1940. Radical operation was carried out in 51.3 per cent of the cases and colostomy in 30.2 per cent. Operation was not done in 17.1 per cent. Grouping the patients according to 5 year periods reveals increasing frequency of radical operations in recent years. In every age group about the same percentage of patients could be subjected to radical operation. The location of the tumor had no influence on the incidence of radical operation. The 209 radical operations included 105 sacral extirpations, 63 sacral resections, 37 combined operations and 4 abdominal resections. The mortality of all radical operations amounted to 19.5 per cent, with the sacral methods it was 13 per cent and with the combined methods 4.5 per cent. Sacral extirpation had a mortality of 17 per cent and sacral resection one of 6.3 per cent. The mortality rates decreased as time advanced. During the last five years the total mortality of radical operations was 11.2 per cent and no fatality resulted in 36 sacral resections, the mortality of the combined operations was 20 per cent. Peritonitis, phlegmon and sepsis, pneumonia and metastases were the chief causes of death after radical operation. Metastases were already present and caused death in 20 per cent of the patients subjected to radical operation. The lower the tumor was located, the higher was the incidence of recurrences. After five years there were practically no recurrences. Young patients are more subject to recurrences than older patients. Examination of the lymph nodes of the resected specimen is of great importance for the prognosis. The survival of patients who underwent radical surgery was 33 per cent at the end of three years, 19 per cent at the end of five years and 16 per cent at the end of ten years. With regard to all operations the survival was 20 per cent at the end of three and 12 per cent at the end of five years. Colostomy, which was done in 30 per cent of the cases, had a mortality of 20 per cent, and only 2.3 per cent survived at the end of three years.

**Hypertension During Intracranial Pressure Increase.**—Bierhaus states that intracranial traumatic hemorrhage causes in addition to the local irritation changes in peripheral parts of the organism. Effects on the respiration and the circulation are of the greatest importance. The author studied these changes in dogs, utilizing the sphymographic method of Frank and Broemser. The effect of trepanation and of increased intracranial pressure was thus determined. The centrogenic hypertension which develops subsequent to intracranial pressure is mild at first but later becomes more pronounced. This hypertension is caused by a great increase in the elastic resistance at the termination of the arterial system while at the same time there is a decrease in the beat and minute volumes and the pulse frequency. Thus there is not only a peripheral resistance hypertension but also an elasticity hypertension. Not only the vagus but also the vasomotor center is irritated. In a second experiment the action of various pressure increases in



the cranium was ascertained. A noticeable failure of the circulation was evident at the beginning of a third experiment, but following intramuscular injection of synephrin tartrate there was an increase in blood pressure. In subsequent experiments the vagus was cut on both sides, then the vagus and the sympathetic were cut and finally all nervous influences were eliminated. Studies were also made on the action of vasopressin, acetylcholine and epinephrine. The author concludes that in the presence of an intracranial increase in pressure there results not only an irritation of the sympathetic centers but also a flooding out of vasopressin into the blood stream. A peripheral resistance hypertension and an elasticity hypertension are produced in this manner.

### Munchener medizinische Wochenschrift, Munich

89 415-436 (May 8) 1942 Partial Index

- Use of Electric Current in Diagnosis and Therapy of Paralysis of Muscle. O. von Schwerin—p. 415  
Problems of Diphtheria with Special Reference to Active Immunization. K. W. Claiberg—p. 418  
New Method of Testing of Superacidity Drugs. R. Müller, A. Edelmann and K. Kühn—p. 423  
Diagnostic Considerations with Regard to Extravasation into Knee Joint. W. Bever—p. 426

**Diphtheria Problem**—Claiberg's experiences with 817 carriers of diphtheria bacteria revealed that 72 days was the average carrier period of bacillus of gravis type, 86 days for bacillus of intermediate type and 19 days for the bacillus of mitis type. Statistics show that with regard to incidence and mortality the relation of individuals actively immunized to those not immunized is as 1 to 47 and as 1 to 86 respectively. Therefore mass immunization on a large scale is warranted in threatened areas. The obligatory active immunization of all children who are to be sent to recreation centers or to other countries is required by the decree of the board of health. In Berlin, general active immunization of all school children from 6 to 14 years of age is under way. The new immunization serums are built up with toxoid.

### Wiener klinische Wochenschrift, Vienna

55 261-280 (April 3) 1942 Partial Index

- Cancer of Larynx. H. Märschik—p. 261  
Arterialization of Blood as Therapy. E. Hamberger—p. 268  
Biochemistry of Bile in Different Stages of Age. D. Kotsovsky—p. 269  
\*Pathogenesis and Corpus Luteum Treatment of Essential Thrombopenia. R. Stöger—p. 270

### Corpus Luteum Treatment of Essential Thrombopenia

—Stöger believes that the bleeding tendency in purpura hemorrhagica may be caused by functional disturbance of the capillary system and by latent insufficiency of bone marrow involving particularly the blood platelets. The spleen may be responsible for both. A definite bleeding tendency exists at the time of menstruation, which may be due to corpus luteum hormone deficiency or to ovarian dysfunction in young girls and to the absence of corpus luteum hormone in women at the menopause. Two tablets of 10 mg proluton C (a compound closely related to progesterone) were given orally three times a day in three cases of essential thrombopenia, one of them a case of recurrence six weeks after a splenectomy. Hemorrhages became less severe or were temporarily arrested in all cases. Increase in blood platelets could be demonstrated in only one case.

### Zentralblatt für Chirurgie, Leipzig

69 849-896 (May 23) 1942 Partial Index

- Stripping of Tendons of Anserinus Tract or of Its Individual Tendons (Sartorius, Gracilis, Semitendinosus). C. Henschen—p. 850  
\*Cure of Erysipelas by Azosulfamide. W. Tonndorf—p. 857  
\*Gas Gangrene and Its Treatment During Present War. V. Tüchel and J. Curcumei—p. 861  
Diathermy Knife in Treatment of Gas Edema. B. Toth—p. 864  
\*Spontaneous Hypoglycemia. W. Beckert and E. Wachs—p. 870

**Azosulfamide for Erysipelas**—Tonndorf's observations were made at an otorhinolaryngologic clinic, so that with few exceptions the erysipelas involved the head. His experience with azosulfamide dates back to 1936 and covers 125 cases, of

which 122 healed promptly. The daily dose was two tablets three times daily for adults, while children received one half of this. It was found advisable to continue the medication for some time after the fever had subsided, because relapses were occasionally seen when the medication was broken off early. The azosulfamide at present is given for ten days, although the fever generally subsides in two days. The fall in temperature is accompanied by improvement in the general condition. The 3 patients with erysipelas who were not benefited by the azosulfamide received the drug previously. The effect of azosulfamide on erysipelas is so prompt that a differential diagnosis can be based on it. If the temperature does not fall promptly, the presence of other processes such as thrombophlebitis, mastoiditis, deep abscesses or phlegmons must be suspected.

**Treatment of Gas Gangrene**—Tüchel and Curcumei encountered 20 cases of gas gangrene among 2,500 wounded (0.8 per cent). During the first world war the incidence was 2 per cent. Thorough surgical treatment of the wounds (wide opening, excision of all suspected tissue, removal of foreign bodies), rapid transport to base surgical hospitals, the use of antiseptics and intravenous antigangrenous serotherapy are mainly to be credited for the reduced incidence. The authors place particular emphasis on the intravenous administration of antigangrenous serum. They now administer it exclusively by the intravenous route, after the treatment of the wound. With this treatment amputation was necessary in only 7 of the 20 cases. The serum was injected in doses of 50 cc twice daily. These injections were continued for five days. Injection was performed as slowly as possible, patients in shock were first given intramuscular injection of 1 mg of epinephrine. The serum injections were not followed by cardiac disturbances or by intensification of the shock. In 1 instance serum disease developed on the seventh day, but without serious results. The intravenous serotherapy of gas gangrene is a valuable addition to the surgical treatment and will reduce not only the mortality but also amputations.

**Spontaneous Hypoglycemia**—Beckert and Wachs show that primary spontaneous hypoglycemia or hyperinsulinism may be produced by pancreatic disorders such as adenoma (rarely carcinoma) of the islands of Langerhans, an increase in these islands or pancreatitis or pancreatic necrosis. Secondary spontaneous hypoglycemia results from hypofunction of such endocrine organs as the adrenals, the thyroid or the anterior pituitary or from pluriglandular insufficiency. It also occurs in connection with disorders of the stomach, duodenum, liver, biliary passages and the brain, in progressive muscular atrophy and in focal sepsis. It may be brought on by irregular meals, one sided diet, hunger, glycogen storage disease and the like. All these disorders cause either increased production of insulin or deficient counter regulation and thus produce a disturbance in the carbohydrate metabolism. The exact diagnosis of spontaneous hypoglycemia requires various functional tests such as repeated determinations of the fasting blood sugar, blood sugar curves over a whole day with ordinary diet and a diet free from carbohydrates, eventually combined with work tests, blood sugar determinations following alimentary dextrose tolerance tests, injection of epinephrine and of insulin, also examination of the endocrine function of the pancreas. The differential diagnosis of primary and secondary spontaneous hypoglycemia may be difficult. The history, the general status and the existing disorders (endocrine and gastrointestinal) must be considered. Primary spontaneous hypoglycemia is usually severe and has a tendency to exacerbation, whereas secondary hypoglycemia causes only mild, sympathetic disturbances. The tolerance tests serve further clarification, but they may fail occasionally. The authors present an illustrative case of primary spontaneous hypoglycemia that was brought on by adenoma of the island cells. The treatment of hypoglycemia is at first symptomatic, consisting of a diet high in carbohydrate and fat content, but the underlying cause must be determined and treated. Primary hypoglycemia may require surgical treatment. In case of solitary adenoma of the pancreas, complete cure is possible by operation.

## Book Notices

**Peripheral Vascular Diseases (Angiology)** By Saul S. Samuels. A.M. M.D. Consulting Vascular Surgeon Long Beach Hospital Long Beach New York. Oxford Medical Outline Series. Cloth. Price \$2. Pp 84. New York London & Toronto Oxford University Press 1913

The author offers a brief outline of peripheral vascular diseases, divided into nineteen chapters. Each chapter is followed by a representative list of references. There are no illustrations, although the anatomy of the peripheral vessels and the anatomy of the autonomic nervous system could have been greatly elucidated by a few simple line drawings. The anatomy of the vascular tree is a purely descriptive enumeration of branches without any attempt to establish patterns of collateral circulation in the case when the main pathways are obstructed. The autonomic nervous system also receives a simple enumeration—a diagram would be very useful. The author does not regard the histamine flare, the saline wheal, the intermittent hyperemia, suction and pressure, and sympathetic denervation as being of much value. Papaverine is a 'theoretical vasodilator', deep venous thrombosis of the lower leg is not mentioned as a clinical entity. Paravertebral sympathetic block as a diagnostic and therapeutic measure is not described. It is difficult to see for whom this outline is written, for the medical student it is too subjective and incomplete for the general practitioner it does not give enough detail, for the specialist there is here and there a pithy aphorism which reflects the vast clinical experience of the author hidden under the dogmatic statements of the outline. The physical makeup of the handy volume is excellent.

**The Dispensatory of the United States of America** By Horatio C. Wood Jr. M.D. Ph.D. Professor of Therapeutics in the University of Pennsylvania Philadelphia and Arthur Osol Ph.G. M.S. Ph.D. Professor of Analytical and Physical Chemistry and Director of the Chemical Laboratories in the Philadelphia College of Pharmacy and Science assisted by Heber W. Youngken Ph.D. Ph.D. Sc.D. Professor of Pharmacognosy and Biology in the Massachusetts College of Pharmacy Boston and Louis Gerstenfeld B.Sc. Ph.D. D.Sc. Professor of Bacteriology and Hygiene and Director of the Laboratories of Bacteriology and Clinical Chemistry in the Philadelphia College of Pharmacy and Science. Based on the Twelfth Revision of The United States Pharmacopoeia The National Formulary Seventh Edition and the British Pharmacopoeia 1932 and its Addenda. Twenty-third edition. Cloth. Price \$15. Pp 1881. Philadelphia London & Montreal J. B. Lippincott Company 1943

A review of the twenty-third edition of the Dispensatory of the United States of America should be preceded by congratulations to the editors. Long known and widely used for the mass of information which it contains, this book has been available for a hundred and ten years through twenty-three editions, the first being published in 1833. Seven years have elapsed since the twenty-second edition was issued, and many changes have occurred in our knowledge of drugs. The twenty-third edition takes full cognizance of these changes. While the general plan remains the same, the contents include new articles on the glycosides, alkaloids, sterids, amino acids and surface acting agents and revisions to recognize U.S.P. XII (up to Feb. 1, 1943), National Formulary VII (up to Feb. 1, 1943), British Pharmacopoeia and its five addenda, and New and Non-official Remedies. Many other revisions have been made, and it is not surprising to note that the index includes more than thirty thousand entries. The contents are divided into an explanatory introduction, list of abbreviations, descriptions of drugs recognized by the United States Pharmacopoeia, the Pharmacopoeia of Great Britain and the National Formulary, descriptions of drugs not recognized in these official compendiums, descriptions of processes, reagents, solutions and tables of the United States Pharmacopoeia and the National Formulary, and general index. No description of this book is necessary for those acquainted with its pages; an adequate description is impossible in a review for those who do not possess this familiarity. It seems sufficient to say that the twenty-third edition of the Dispensatory provides an up to date encyclopedic source of information which is not available elsewhere between the covers of one book. It is essential to most libraries of those interested in drugs; a valuable addition to any library if the owner wishes an authentic work of reference.

**Contemporary Psychopathology** A Source Book. Edited by Silvan S. Tomkins. Ph.D. Instructor in Psychology Harvard University Cambridge. With an introduction by Henry A. Murray. M.D. Ph.D. Director of the Harvard Psychological Clinic. Cloth. Price \$5. Pp 600 with illustrations. Cambridge Harvard University Press 1943

This book represents a successful and valuable compilation of contemporary studies in psychopathology. Contributions to the literature by fifty-four different authors are printed in full without comment. The reader is free to form his own judgments. Material is presented relative to problems of childhood, psychoneuroses, schizophrenic psychoses, psychosomatic medicine and experimental psychopathology. It is evident that careful thought was given to the choice of each paper included. The editor has wisely chosen those contributions which stress the dynamic approach to problems of human behavior. While there are many more excellent contributions in the literature to all the fields covered, the editor had to choose those which he considered representative. It might have been advisable to include a recommended list for further reference either at the end of each chapter or as an index, but this is a minor criticism. Although, as the editor states, "This volume is designed for courses in abnormal psychology," it is unreservedly recommended to all students of psychology and psychiatry. As a reference book it is unequalled.

**Nurses Handbook of Obstetrics** By Louise Zabriskie R.N. Director Maternity Consultation Service New York City and Nicholson J. Eastman M.D. Professor of Obstetrics in Johns Hopkins University Baltimore. Seventh edition. Cloth. Price \$3.25. Pp 714 with 376 illustrations. Philadelphia London & Montreal J. B. Lippincott Company 1943

The present book is a distinct advance over the previous editions. In place of the fourteen men and women who contributed sections in the last edition, Eastman is the sole co-author except for the chapter of the history of obstetrics. In recent years the trend in the preparation of textbooks for nurses has been for the collaboration of a physician and a nurse, and the great value of such teamwork is manifest in this book, for Eastman has done his part admirably. The book has been almost completely rewritten, reillustrated and reset. Many of the useless data contained in the sixth edition have been omitted. The information presented is highly practical, and emphasis has been laid on public health nursing in obstetrics. The illustrations are abundant and highly instructive. At the end of each chapter is a small but select list of books and articles for suggested reading. Throughout the book are helpful "self-evaluation tests." The publishers have done their part well. The book is much more compact than the last edition, and the type and illustrations are clear. All in all the book is a valuable asset for nurses and it should be widely used.

**Bases para la organización de un hospital general** Por los doctores Pedro L. Farfán Jefe del Servicio central de rayos X del Hospital nacional General Calixto García. Alfredo Antonetti Profesor titular de tuberculosis de la Facultad de medicina de la Universidad de la Habana y Víctor Santamarina Instructor de la Cátedra de patología y clínica infantiles de la Facultad de medicina de la Habana. Paper. Pp 333. Habana Cultural S. A. 1943

This book is a well organized outline of the fundamentals of hospital organization based on the minimum requirements and standards recommended by the American College of Surgeons and by the Council on Medical Education and Hospitals of the American Medical Association. The fifteen sections include the organization of the administrative and medical staffs, board of directors, hospital personnel, dietetic department and library and give the main lines for the routine work of the medical, surgical and pathologic divisions and laboratories.

**A List of Schools of Nursing Meeting Minimum Requirements Set by Law and Board Rules in the Various States and Territories** Compiled by Department of Studies National League of Nursing Education. Correct to January 1 1943. Paper. Price \$2.25. Pp 36. New York 1943

This 1943 list gives information similar to that of previous years. In addition, it gives the average daily number of patients and shows also the increased enrolment in schools of nursing. The list serves as a useful handbook for the type of information about schools of nursing that lends itself to statistical reporting. It contains the names of 1,297 schools of nursing in the United States and 11 in Hawaii and Puerto Rico that were approved by the various state and district boards of nursing examiners on Jan. 1 1943.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. FURTHER LETTERS MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

### REPEATED INTESTINAL INTUSSUSCEPTION

**To the Editor**—Have you any knowledge of any form of postoperative treatment which has proved of value in preventing recurrence of intestinal intussusception? A 29 months old boy has had three attacks of intussusception, at 13 months 21 months and 28 months. Each attack necessitated laparotomy and reduction. No abnormalities or anomalies of the bowel were found. Fear that there may be further attacks leads me to make this inquiry.

M. D., New Jersey

**ANSWER**—Because of the rarity of the condition and the fact that no abnormalities and anomalies were found, operation in this case is inadvisable, especially as intussusception tends to become extinct as age progresses. In general most authors feel that any type of operation to prevent a future intussusception is inadvisable because 1. Although 80 per cent of the intussusceptions are in the region of the ileocecal valve, there is no assurance that future intussusception will occur in that region rather than in other parts of the bowel. 2. All operations which have been devised for this condition entail a suturing of the large bowel to the parietal peritoneum or to the ileum, and it is thought that this suturing of the large bowel definitely predisposes to infection. 3. The condition is so rare that it is better to run the risk of recurrence rather than the danger of possible infection. As no operation is known at present which will definitely prevent a recurrence of intestinal intussusception surgery is contraindicated.

### FRESH HEMORRHAGE FROM BOWEL AFTER TONSILLECTOMY

**To the Editor**—A boy aged 16 had his tonsils removed locally under 2 per cent procaine hydrochloride with no preoperative medication. Postoperative bleeding was minimal and stopped completely within thirty minutes after operation. The patient was allowed to go home in another hour. About four hours postoperatively he began losing bright red blood from the bowel, no cause could be found. I am at a complete loss to explain this other than as a coincidental phenomenon. There is a history, however, of the boy's having pocked cascara bark in a dusty warehouse the day preceding the operation, however, he suffered no immediate ill effects from this contact. I should like an opinion as to the possible relation of the bleeding to the operation and also the contact with cascara bark.

M. D., Oregon

**ANSWER**—It is impossible to give a categorical answer to this query, but it can be reasonably certain that the loss of bright red blood from the bowel was not due to post-tonsillectomy bleeding, for, as stated, the bleeding stopped completely within thirty minutes, and as this was a local tonsillectomy with normal pharyngeal and laryngeal reflexes it is not likely that the patient swallowed any blood. Let us assume, however, that the patient might have bled a little from one or both tonsillar fossae and in the reclining position in bed swallowed some blood. This blood would have to pass through the stomach and intestine and would appear definitely altered in the stool, that is, it could not be bright red because of the numerous chemical changes.

The inquirer also tells us that "no cause could be found" when the patient began passing bright red blood from the bowel four hours postoperatively, so that one is at a loss to explain the passing of bright red blood by bowel.

The contact with cascara bark would have no relation to the bleeding by bowel, for the bark would have to be ingested to induce purgation and intestinal action.

A complete proctologic survey should be made to rule out fissures, internal hemorrhoids, ulceration and kindred structural changes as well as to make a painstaking recheck of the history of any symptoms of dysfunction of the sigmoid, rectum and anus.

If these studies should fail to locate a lesion, the patient should be watched and thoroughly examined at the first moment that bleeding by bowel is reported, for, as is well known, a patient may bleed from the bowel but the proctologist may not be able to locate the source of the bleeding after the latter has stopped, just as the rhinologist often is unable to locate the source of nasal bleeding after the epistaxis has been controlled or has spontaneously ceased.

### DETERMINATION OF BLOOD pH

**To the Editor**—It would assist me greatly if I knew the best method and commercial apparatus for the determination of blood pH. The textbooks in biochemistry teach me that the blood pH can be determined by expired air, urine and blood. I should prefer a respiratory method as a matter of convenience. However, I would sacrifice any objection for reliability. Any information and direction to literature will be of tremendous help.

Richard J. Wehs, M.D., Louisville, Ky.

**ANSWER**—A reliable method for estimating the plasma pH is the colorimetric procedure of G. E. Cullen (*J. Biol. Chem.* 52:507 [June] 1922).

**Principle**—Whole blood is oxalated and centrifuged under oil. The plasma is added to isotonic solution of sodium chloride containing the phenol red indicator and compared with standards of known pH values.

**Reagents**—1. Sodium chloride 0.9 per cent in water.

2. Phenol red solution 0.03 per cent in water. To 0.030 Gm. of phenol red in a glass mortar add 0.86 cc. of hundredth normal sodium hydroxide and distilled water. Grind until dissolved. Dilute to 100 cc. with distilled water.

3. Phosphate buffer solutions of known pH values.

(a) Fifth molar dihydrogen potassium phosphate. Use the highest reagent grade and dry at 110-115°C. to constant weight. Dissolve 27.232 Gm. of the dry salt in good distilled water and dilute to 1,000 cc.

(b) Fifth molar sodium hydroxide. Take 200 cc. of accurately standardized carbonate free N-NaOH and dilute to 1,000 cc. with recently boiled water.

Make the following dilutions in 200 cc. volumetric flasks. Use recently boiled water for the dilutions.

pH	M/5 KH <sub>2</sub> PO <sub>4</sub> Cc.	M/5 NaOH Cc.	Dilute to Cc.
6.8	50	23.60	200
7.0	50	29.54	200
7.2	50	34.90	200
7.4	50	39.34	200
7.6	50	42.74	200

### 4. Hundredth normal sodium hydroxide

**Procedure**—The blood is drawn under liquid petrolatum and oxalated. It is transferred to a small centrifuge tube with a layer of liquid petrolatum over the blood sufficient to fill the tube. Stopper with a one hole rubber stopper in such manner that no air remains in the tube and that the excess oil being replaced by the stopper is forced out through the hole in the stopper. Then stopper the hole in the stopper with a tightly fitting glass rod. Centrifuge until a good separation of the corpuscles has been accomplished.

Select Pyrex test tubes of the same diameter (15-16 mm. inside) and color. Measure 20 cc. quantities of the standard buffers of pH values 7.0, 7.2 and 7.4 into separate tubes, add liquid petrolatum to prevent absorption of carbon dioxide and 7 drops of the 0.03 per cent phenol red. Mix each well with a fine stirring rod. These are standards to be compared with the unknowns in a comparator block.

Prepare the unknowns as follows. To 100 cc. of a freshly prepared 0.9 per cent sodium chloride solution in a 100 cc. cylinder add liquid petrolatum to make a 1/4-1/2 inch layer. Add 35 drops of the 0.03 per cent phenol red solution and then very cautiously hundredth normal sodium hydroxide until the color corresponds to the pH 7.4 standard. Stir with a fine glass rod. Transfer 20 cc. to one of the test tubes and cover with liquid petrolatum. To this deliver under the oil 1 cc. of the blood plasma and mix with the fine glass rod. This is tube C.

To a fourth tube (D) transfer 20 cc. of the 0.9 per cent sodium chloride solution plus liquid petrolatum but no phenol red. To this also add 1 cc. of the blood plasma in the same way. Stir well with a fine glass rod.

For comparison in the comparator place the standard tube in front of tube D and tube C in front of a tube containing 20 cc. of 0.9 per cent sodium chloride plus liquid petrolatum. Compare with different standards until the best match is found.

Note the temperature and pH. To correct for the temperature effect calculate (0.42-0.01 t), where t is the temperature in degrees C. In case the temperature is below 38°C. subtract the value (0.42-0.01 t) from the observed pH to obtain it for 38°C.

### CARCINOGENS AND EXPERIMENTAL CARCINOMA

**To the Editor**—About how long does it take to induce papillomas by daily application of benzene to the skin of a rabbit? How may carcinoma be produced in the guinea pig and mouse?

M. D., Ohio

**ANSWER**—Careful compilation of the relative carcinogenic activity of various carcinogens by Hartwell in 1941 does not give any instance of papillomas induced in rabbits by benzene. Carcinoma may be induced in the mouse by a variety of substances. Those most frequently used are 3,4-benzpyrene, 20

methylcholanthrene and 1,2,5,6, dibenzanthracene. The shortest period after application of the carcinogen to the appearance of the tumor is about sixty days. Usually a considerably longer time is required.

Carcinoma in the guinea pig is more difficult to induce. Foulds reports 1 case following injection of thorium dioxide in the nipple region. It may also prove that estradiol will be active in producing carcinoma, according to Lipschütz.

The review of the field of carcinogens published by J. L. Hartwell, National Cancer Institute, Bethesda, Md., is recommended for detailed information.

### DERMATITIS OF HANDS IN DITTO MACHINE OPERATORS

To the Editor—After sixteen months of employment a stenographer who also operates a ditto machine developed a subacute dermatitis of the palms sides of the fingers and flexor surfaces of the wrists all approximately two months ago. The eruption is blotchy or in some instances consists of small vesicles. It itches severely. Besides handling carbon paper she used a liquid supplied by the Ditto Company Chicago to remove stains from the fingers. She states that soaps will not remove the stains. The thought suggests itself that this liquid may be the contact factor causing her dermatitis. I should appreciate any help you may be able to supply as to the likelihood of this suspicion being true and if possible suggest a substitute for removing these stains from the fingers.

H. C. Miller MD Racine Wis

ANSWER—Dermatitis of the hands among ditto machine operators is not of infrequent occurrence. If it is occupational, the carbon paper is not the usual cause.

In an investigation of an outbreak of dermatitis among office workers (Schwartz, Louis, and Sulzberger, Marion B. *Dermatitis Among a Group of Office Workers Found Not to Be of Occupational Origin, Pub Health Rep* 52 1441 [Oct 15] 1937) patch tests were performed on 54 persons with carbon papers of various compositions without obtaining any positive reactions. The cause of the dermatitis if occupational, in most such cases is the cleanser used to remove the indelible dyes from the skin.

While the composition of the particular ditto remover which is mentioned is not available, such dye removers usually consist of a soap or a vanishing cream base containing a solvent such as carbital or carbon tetrachloride. Dermatitis may well be caused by the frequent use of such a dye remover, especially if the skin is naturally thin and dry. Not only does such a dye remover tend to remove the indelible dye from the epidermis, but it also tends to remove the fatty secretions of the skin.

Many cases of dermatitis caused by ditto remover cannot be proved by patch tests, because in performing the patch test only a small amount of the remover is used, whereas under actual working conditions the skin is exposed to much greater amounts.

The indelible inks used on ditto machines consist of such dyes as methyl violet, crystal violet, various oils and solvents. In rare instances, sensitivity may be present to one or more of these ingredients.

A method suggested for the removal of indelible ink stains from the skin is to immerse the hands in a 1:1,000 solution of potassium permanganate for a minute followed by washing the hands in a 5 per cent solution of sodium bisulfite. This is to be followed by washing with soap and water to remove all traces of the reagents. In cases in which such treatment has a deleterious action on the skin, it should be followed by the use of a simple emollient cream such as equal parts of wool fat and cold cream.

### ANESTHESIA FOR OPERATIONS ABOUT HEAD

To the Editor—I am seeking information regarding the hazards of using pentothal sodium for operations about the head and neck, most particularly septic surgery as for example sublingual abscess. Are there any contraindications to the use of pentothal in such cases? If so what would be the anesthetic of choice?

First Lieutenant M. C. A. U. S.

ANSWER—Pentothal sodium is used for minor operations about the head and neck. However, it is not particularly suitable for prolonged operations unless it is combined with local anesthesia or unless an intratracheal tube has been inserted before operation has begun. For septic conditions such as sublingual abscess, peritonsillar abscess or phlegmon of the neck, pentothal sodium is not the anesthetic agent of choice. The contraindication to its use is that some pus or foreign material may gravitate to the throat and cause laryngospasm. This spasm is sometimes so severe and so prolonged that a fatal outcome is threatened. It has been suggested, by Capt. George Bradasch, M. C., A. U. S., that preliminary tracheotomy be done in these cases if pentothal is to be used.

Few persons will submit to the opening of an abscess without some anesthesia, but the hazard is so great that the following

precaution should be followed if general anesthesia is to be used. The patient's head should be lowered so that the contents of the abscess will not obstruct the air passages as it drains.

Nitrous oxide and oxygen, administered by a nasal inhaler only to the point of analgesia, seems to give the safest general anesthesia for the persons here under consideration.

### PROBABLE PERNICIOUS ANEMIA WITH NEURAL SYMPTOMS

To the Editor—A man aged 53 complained of numbness and tingling in both hands and feet for the past three to six weeks. Inquiry revealed that he had had some difficulty in walking chiefly from ataxia which was most noticeable in the dark or when walking up or down stairs. Examination revealed hyperactive deep reflexes, bilateral positive Babinski reflex (dorsiflexion), positive Romberg sign, absent vibration sense and some difficulty in the heel toe and finger to nose tests. It was later learned that the paresthesia actually had been present in the lower extremities up to the knees and in almost the entire upper extremities with some evidence of this in the upper chest and lower abdomen. A diagnosis of subacute combined degeneration of the spinal cord was made. There was no evidence of primary pernicious anemia in the blood which showed a red blood cell count of 4,300,000 and hemoglobin of 80 per cent with a normal smear. He has received four injections of 500 mg of thiamine and 40 units of a preparation containing anti-pernicious anemia principle twice weekly and then a similar amount every two weeks. There has been definite subjective improvement in that practically all his paresthesia and ataxia has disappeared. I am at a loss as to the future treatment. I intend to give him 2 cc of the anti-pernicious anemia preparation twice a month intramuscularly. This treatment apparently should be given indefinitely but how is one to judge the amount required in the absence of any hematologic abnormality? At the present time he has practically no gastrointestinal complaints or feeling of weakness or dyspnea. There is no evidence of icterus in the skin or in the blood findings. The only relevant past history is that of a cholecystectomy in 1926 and pneumonia in 1942 for which he was treated with some sulfonamide drug.

M. D. Rochester N. Y.

ANSWER—The typical neural changes with improvement after parenteral liver therapy would seem sufficient to make a diagnosis of pernicious anemia. Further support would be given to the diagnosis by the finding of gastric anacidity following histamine stimulation. It is known that, in pernicious anemia, neural symptoms may appear before there is evidence of anemia.

The great majority of patients with pernicious anemia can be maintained in complete remission by the injection of 15 units of liver extract at intervals of two weeks. By close questioning for the recurrence of paresthesias and by a careful neurologic examination every three months it should be possible to detect progress of the cord disease before any permanent harm is done. If progression occurs, the dose of liver extract can be increased accordingly.

### DYSENTERY FROM BALANTIDIUM COLI

To the Editor—For the last two months I have had under hospital care 2 brothers aged 3 and 5 whose chief complaint is a severe chronic diarrhea. Repeated fresh stool examinations have revealed large amounts of *Balantidium coli* and no *Giardia lamblia* nor *Amoeba histolytica*. Under a high protein high caloric diet and iron by mouth their general condition which was poor on admission has greatly improved. However the diarrhea persists there being eight to ten liquid foul abundant and bloody stools per day without tenesmus. They have had chenopodium on three occasions and two courses of carbarsone 0.1 Gm daily without any improvement in the diarrhea or diminution in the amount of *Balantidium coli* in the stools. I will appreciate information concerning treatment of this condition.

A. J. Mejia MD Central Aguirre Puerto Rico

ANSWER—The treatment of balantidial dysentery is notoriously unsatisfactory. Carbarsone, acetarsone, thymol and oil of chenopodium are among the drugs which have on occasion been successfully used. Strong (Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases, Philadelphia, Blakiston Company, 1943, p. 452) lists the following measures for which some merit has been claimed:

1. Enemas of organic compounds of silver, such as strong protein silver.

2. Oil of chenopodium enemas. In 12 cases in Siam 15 cc of oil of chenopodium in 150 cc of olive oil effectively cleared the bowel of balantidia, but 1 patient developed chenopodium poisoning when the enema was repeated within twenty-four hours.

3. One patient responded to enemas of methylene blue 1:3,000.

4. E. Silva of Brazil treated 10 patients resistant to chemotherapy but who responded symptomatically, and who lost the balantidia following a regimen of 350 cc of milk every six hours. The refractory patient subsequently responded to a proprietary preparation of acetarsone (a drug with high toxicity).



It may of course be desirable to make certain that the persisting symptoms are balantidial in causation. Sigmoidoscopy to rule out the presence of amebic ulcerations is therefore suggested.

### COMPLICATIONS OF FECAL FISTULA

**To the Editor**—On July 20, 1943 a 50 year old white man presented a strangulated hernia in the right groin of nine hours' duration. A soft irreducible mass had been present for four or five years. Three soft stools were passed after strangulation. There were mild nausea and slight epigastric discomfort. His past history included pneumonia. The patient was muscular and healthy looking with a florid face, perforated nasal septum, dark reddening of the pharynx, carious teeth, swollen gums, a soft flat abdomen, enlarged subcutaneous inguinal rings and a rounded mass 2 cm in diameter occupying the region of the right femoral ring. This was almost hard and was not tender. It was immovable. Under field block and local infiltration of procaine and epinephrine solution the hernia was exposed. Opening the sac freed a small amount of brownish red fluid without odor. A small knuckle of bowel was caught tightly in the femoral ring. It was necessary to divide the lower part of the inguinal ligament. The proximal and distal limbs of the bowel were drawn downward through the enlarged femoral ring. A blocked area was found which on one side extended to the mesenteric attachment. An enterostomy was performed in both limbs through sound bowel and a loop approximately 12 cm in length was left in the open wound. The surfaces were sprinkled with sulfanilamide. On the first few days the patient had colicky epigastric pain. On the third postoperative day the exteriorized bowel was removed with a cautery. Fecal drainage through the fistula was free. At times the bowels were constipated and the patient complained of epigastric pain. Excoriation of the skin about the fistula soon became a serious problem. On September 9 the patient was encouraged to walk. On stepping into the tub he suddenly felt "blind" and became conscious of sharp pains in his heart and was breathless. He appeared pale and frightened, he was breathing deeply and the blood pressure was 92/70. He soon began spitting up a small amount of blood not accompanied by sputum, and the next day there was severe pain in the left lower chest. This was also associated with elevation of temperature. He continued to spit up small quantities of blood. He was extremely apprehensive. Diagnosis of pulmonary infarct was made. Diminished breath sounds and rales became apparent over the painful area. Fever and rapid pulse continued for several days, together with leukocytosis. On September 20 an acute thrombophlebitis developed in the left lower extremity, with a great deal of pain. On the following day the first four lumbar sympathetic ganglions were injected with procaine. This was soon followed by relief from pain and rapid decrease in swelling. Arterial pulsation in the foot disappeared with the onset of the thrombophlebitis, and the dorsalis pedis pulsation gradually reappeared. A bronchial pneumonia which developed over the left lower chest rapidly cleared up under the influence of sulfathiazole. Severe mental depression ensued, which is now improving. The patient finds the pain from skin excoriation almost unbearable. Zinc oxide ointment seems to give more relief than any other measure tried. The sedimentation time on September 28 was 20 minutes to 18 mm and on October 27 it was 50 minutes to 18 mm. He has been practically fever free for four weeks. Anastomosis of the bowel in the near future is being contemplated in order to lessen the chances of further complications. Is heparin indicated in this case? If so will you suggest the dosage, method of administration and sources of the drug. Any further suggestions in this case will be greatly appreciated.

Alex S. Moffett, M.D. Banner Elk, N.C.

**ANSWER**—If the patient is now ambulatory, heparin need not be considered. When the fistula is being closed, heparin may be given as a prophylactic measure, 5 cc every four hours during the day by the intravenous route. This is kept up for three to four days. The purpose is to prevent further thrombosis and embolism. For the excoriated skin, many measures have been advocated, most of which are really effective only before the irritation starts. Covering the skin adjacent to the fistula with yeast is helpful. A yeast cake is made up with batter and applied over the skin. When it dries and cracks it is removed and a fresh yeast batter is applied (Mead, C. H. *Minnesota Med* 16:450 [June] 1933). A 5 per cent tannic acid ointment has also been recommended (Potter, E. B. *Ann Surg* 95:700 [May] 1932). Diversion of the fecal current into the bowel is of course the desirable solution.

### NUTRIENTS IN FRUIT JUICES AND IN RESIDUE AFTER PASSAGE THROUGH JUICER

**To the Editor**—Patients have frequently sought my advice concerning fruit and vegetable juices. I recently saw one of these electric vegetable juicers demonstrated and was surprised at the amount of residual pulp. I wonder if this pulp does not retain the major part of minerals and vitamins, so that the vegetable juice is more or less a watery dilution with juice aroma. Does it not seem more advisable to eat the whole vegetable, either raw or cooked, unless special dietary requirements stipulate vegetable juices?

M.D., Wisconsin

**ANSWER**—A small study has been made on the ascorbic acid, carotene, calcium and phosphorus content of vegetable juices extracted with a hand turned juicer. Extracted thus, it was found that much of the nutrients remained in the vegetables, yet, weight for weight, vegetable and juice were about equal in value.

### BRONCHIECTASIS

**To the Editor**—I should appreciate information on the treatment of an atypical type of bronchiectasis involving the lower lobe of the left lung. The patient lives 100 miles north of Mobile, Ala. Would a conservative treatment of high altitude be of any great benefit, say on the plains of Texas or New Mexico? This patient at times expectorates blood following coughing and is exhausted. There is no elevation of temperature. He is more or less a mouth breather. He is a cooperative patient, and I do not want to subject him to an operation unless it is necessary.

W. E. Allen, M.D., Sweet Water, Ala.

**ANSWER**—An occasional patient with bronchiectasis will be benefited by residence in a dry, equable climate. Improvement is so uncertain and unlikely that patients should always be advised to try the new climate before making any permanent change of residence. At the present time unilateral bronchiectasis can be treated so safely and successfully by lobectomy that any patient having more than minimal symptoms from the disease should be advised to have the operation. The mortality from the operation is not more than 2 per cent.

### INFECTIOUS MONONUCLEOSIS AND PREGNANCY

**To the Editor**—A woman has shown the symptoms and signs of mononucleosis for the past eleven months. The blood picture has been characteristic and she has repeatedly shown a positive agglutination with a titer of 1:26. She wishes to become pregnant. Her general health is good. Will you please tell me what to advise her?

Alexander R. Freeman, M.D., Albany, Ga.

**ANSWER**—It is exceedingly unusual for infectious mononucleosis to remain active for eleven months. Some of the symptoms of this disease, such as glandular enlargement, splenomegaly and hematologic changes, may persist for months or even years after recovery. An agglutination titer of 1:26 may be encountered in normal persons. Only agglutination titers of 1:160 or higher can be taken as significant evidence of active infectious mononucleosis. It is probable, therefore, that the active stage of infectious mononucleosis has already subsided in this patient. At any rate, when this condition is mild and uncomplicated it has no special effect on pregnancy, and prevention of the latter is not necessary.

### SPINAL FLUID IN SUN STROKE

**To the Editor**—What are the usual findings on examination of the spinal fluid and the average neurologic findings in (1) heat stroke and (2) heat exhaustion? What variation may one expect from first hour to twenty-four hours?

Captain, M.C., A.U.S.

**ANSWER**—There have been few observations on the spinal fluid in cases of sun stroke. Stenhausser's critical review in 1910 quotes only Dopter as finding an increase of cells, suggesting a meningitis. Fleck and Hückel found a pressure of 280 mm of water and a bloody, yellow fluid in a case of heat stroke. Straus states that the pressure is usually elevated and that polymorphonuclear cells are found in the fluid in early stages, later lymphocytes.

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### EPINEPHRINE AND CUTANEOUS SENSITIVITY TO ALLERGENS

**To the Editor**—The answer to the query entitled "Possible Effects of Epinephrine and Ephedrine on Cutaneous Tests with Allergic Substances" in the Oct 23, 1943 issue requires comment. The following statement is based on experience with this. When a new patient appears in a severe asthmatic attack, relief is first attempted with epinephrine. The attack is usually ameliorated within one half hour, when the pollen tests are performed. Furthermore, many of these patients have been taking ephedrine and epinephrine up till the day of their visit. Notwithstanding this, the cutaneous reaction of a patient with pollinosis to the pollens is definitely positive. A small number of patients with pollinosis will not react to the cutaneous test regardless of method or concentration of antigen. I am now working with other allergens to determine whether these drugs influence the cutaneous reaction within certain times of their administration. However, since the inquirer asks about hay fever, I do not regard it as necessary to deter the pollen tests because at the use of epinephrine and ephedrine, as a cutaneous reactive pollinosis patient will definitely be positive. It is unnecessary to have a patient suffer at least twenty-four hours to ascertain a pollen diagnosis.

David L. Englesher, M.D., New York



# The Journal

OF THE

# American Medical Association

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MORRIS FISHBEIN, M D

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- American Heart Journal. St. Louis  
American Journal of Clinical Pathology. Baltimore  
American Journal of Digestive Diseases. Fort Wayne Ind.  
\*American Journal of Diseases of Children. A M A Chicago  
American Journal of Hygiene. Baltimore  
American Journal of the Medical Sciences. Philadelphia  
American Journal of Obstetrics and Gynecology. St. Louis  
American Journal of Ophthalmology. Cincinnati  
American Journal of Orthopsychiatry. New York  
American Journal of Pathology. Ann Arbor Mich.  
American Journal of Physiology. Baltimore  
American Journal of Psychiatry. New York  
American Journal of Public Health. New York  
American Journal of Roentgenol. and Radium Therapy. Springfield Ill.  
American Journal of Surgery. New York  
American Journal of Syphilis, Gonorr. and Venereal Diseases. St. Louis  
American Journal of Tropical Medicine. Baltimore  
American Review of Tuberculosis. New York  
Anales de la Cátedra de patología y clínica de la tuberculosis. Buenos Aires  
Anesthesiology. New York  
Annals of Internal Medicine. Lancaster Pa.  
Annals of Otolaryngology and Rhinology. St. Louis  
Annals of Rheumatic Diseases. London  
Annals of Surgery. Philadelphia  
Archiv für Gewerbepathologie und Gewerbehygiene. Berlin  
Archiv für Kinderheilkunde. Stuttgart  
Archiv für klinische Chirurgie. Berlin  
\*Archives of Dermatology and Syphilology. A M A Chicago  
Archives of Disease in Childhood. London  
\*Archives of Internal Medicine. A M A Chicago  
\*Archives of Neurology and Psychiatry. A M A Chicago  
\*Archives of Ophthalmology. A M A Chicago  
\*Archives of Otolaryngology. A M A Chicago  
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Archivos argentinos de enfermedades del aparato digestivo y de la nutrición. Buenos Aires  
Archivos argentinos de pediatría. Buenos Aires  
Archivos latino americanos de cardiología y hematología. Mexico D F  
Archivos de Oftalmología de Buenos Aires  
Australian Journal of Experimental Biology and Medical Science. Adelaide  
Boletín de la Asociación médica de Puerto Rico. Santurce  
Boletín del Instituto de medicina experimental para el estudio y tratamiento del cáncer. Buenos Aires  
Brain. London  
British Journal of Anaesthesia. Manchester  
British Journal of Children's Diseases. Dorking England  
British Journal of Dermatology and Syphilis. London  
British Journal of Experimental Pathology. London  
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Canadian Journal of Public Health. Toronto  
Canadian Medical Association Journal. Montreal  
Cancer Research. Baltimore  
Connecticut State Medical Journal. Hartford  
Delaware State Medical Journal. Wilmington  
Der deutsche Militärarzt. Berlin  
Deutsche medizinische Wochenschrift. Leipzig  
Deutsche Zeitschrift für Chirurgie. Berlin  
Diseases of Chest. Chicago  
Edinburgh Medical Journal  
Endocrinology. Springfield Ill.  
Experimental Medicine and Surgery. Brooklyn  
Gastroenterology. Baltimore  
Glasgow Medical Journal  
Guy's Hospital Reports. London  
Hawaii Medical Journal. Honolulu  
Helvetica medica nova. Basel  
Helvetica Physiologica et Pharmacologica Acta. Basel  
Illinois Medical Journal. Chicago  
Journal of Allergy. St. Louis  
Journal of the Arkansas Medical Society. Fort Smith  
Journal of Aviation Medicine. St. Paul  
Journal of Bone and Joint Surgery. Boston  
Journal of Clinical Endocrinology. Springfield Ill.  
Journal of Clinical Investigation. Boston  
Journal of Endocrinology. London  
Journal of Experimental Medicine. New York  
Journal of the Florida Medical Association. Jacksonville  
Journal of Immunology. Baltimore  
Journal of the Indiana State Medical Association. Indianapolis  
Journal of Industrial Hygiene and Toxicology. Baltimore  
Journal of Infectious Diseases. Chicago  
Journal of the Iowa State Medical Society. Des Moines  
Journal of the Kansas Medical Society. Topeka  
Journal of Laboratory and Clinical Medicine. St. Louis  
Journal Lancet. Minneapolis  
Journal of the Maine Medical Association. Portland  
Journal of the Medical Association of the State of Alabama. Montgomery  
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Journal of the Medical Society of New Jersey. Trenton  
Journal of Mental Science. London  
Journal of the Michigan State Medical Society. Lansing  
Journal of the Missouri State Medical Association. St. Louis  
Journal of the Mount Sinai Hospital. New York  
Journal of the National Cancer Institute. Washington D C  
Journal National Malaria Society. Tallahassee Fla.  
Journal of Nervous and Mental Disease. New York  
Journal of Neurology and Psychiatry. London  
Journal of Neuropathology and Experimental Neurology. Baltimore  
Journal of Neurophysiology. Springfield Ill.  
Journal of Nutrition. Philadelphia  
Journal of Obstetrics and Gynaecology of British Empire. Manchester  
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Kentucky Medical Journal. Bowling Green  
Klinische Wochenschrift. Berlin  
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New Orleans Medical and Surgical Journal  
New York State Journal of Medicine. New York  
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North Carolina Medical Journal. Winston Salem  
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\*Cannot be lent.

- Ophthalmologia Ibero Americana Buenos Aires  
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## SUBJECT INDEX

This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "BI," Bureau of Investigation; "E," Editorial; "C," Correspondence; "OS," Organization Section; "ab," abstracts; the star (\*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths," "Medicolegal Abstracts" and "Societies" are indexed under these titles at the end of the letters "B," "D," "M," and "S." State board examinations are entered under the general heading State Board Reports, and not under the names of the individual states. Matter pertaining to the Association is indexed under "American Medical Association." The name of the author in brackets follows the subject entry.

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*Cong—Congress*  
*Conv—Convention*  
*Dist—District*  
*Hosp—Hospital*  
*Internat—International*  
*M—Medical*  
*Med—Medicine*  
*Nat—National*  
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